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WILLIAM A. SETCHELL

INCLUDING

Directions, Rules and Descriptions,

CALCULATED TO AID PUPILS

IN THE

ANALYSIS OF PLANTS;

WITH

A LABELLING CATALOGUE,

FOR THE

ASSISTANCE OF TEACHERS.

N. Y. ACADEMY LIBRARY OF SCIENCES.

BY AMOS EATON.

AUTHOR OF THE MANUAL OF BOTANY, BOTANICAL DICTIONARY, &c.

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BE IT REMEMBERED, That on the twelfth day of September, in the forty-fifth year of the Independence of the United States of America, Websters and Skinners, of the said District, have deposited in this office, the title of a book, the right whereof they claim as proprietors, in the words following, to wit:

> "Botanical Exercises, including Directions, Rules and Descriptions, calculated to aid Pupils in the Analysis of Plants; with a Labelling Catalogue, for the Assistance of Teachers. By Amos Eaton, author of the Manual of Botany, Botanical Dictionary, &c."

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TO TEACHERS OF BOTANY.

After giving courses of instruction in Botany to more than one thousand pupils, and after having made various attempts at simplifying the method of acquiring a knowledge of this elegant and useful science; I perceive that there still remains one very great obstacle to its progress. Although the expence of necessary books for pursuing this study in the northern and middle states is reduced to about three dollars; yet our economical agriculturalists and mechanics are, and ought to be, unwilling to pay for three or four sets of such books for the use of as many children.

With a view to obviate this difficulty, I suggested to one of my students that, as we exercise our pupils with but a small portion of the plants embraced in each class, a very cheap book might be compiled from the Manual of Botany and the Botanical Dictionary which should contain descriptions of as many plants as we analyze in the most extensive courses. He immediately set about the work; but soon discovered, that no subject relating to Botany required so much experience as that of making a proper selection of materials for the exercises of students. I have now gone through with the labor myself, and here present you with the result. The teacher will of course have other books, and many of his pupils will also provide themselves with complete systems. But with this book in the hands of each student, one set of larger books in a large family, or even five or six to a school of twenty or thirty students, will enable teachers to give instruction to as good effect, as though each student possessed a complete Botanical Library.

About three fourths of plants collected by students must be labelled for the herbarium from the mere *dictum* of the teacher. The remainder should be analyzed by the students in the usual way at stated examinations. After a student has made up an herbarium of a few hundred species, and been well exercised in this abridged system, no further instruction will ever be required. He will then be able to analyze plants with the Manual or with any other system.

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A Grammar of Botany is prefixed upon the plan of Dr. E. James' First Lessons; and a vocabulary is annexed, which embraces all the terms used in this book. To assist the pupil in spelling the name to be written on a label, and in setting the right class and order and natural order upon the corners of the label, a Labelling Catalogue of all the genera, growing in the northern and middle states, with their respective species subjoined, is annexed at the end of the exercises in the genera.

The names, numbers and properties of the natural orders, and the rules for distinguishing poisonous plants, are inserted; and the former are referred to from the labelling catalogue.

I will take the liberty here to give you my opinion respecting several late elementary publications on botany. Locke's elementary work, published at Boston, 1819, with plates, is an excellent elementary school book. It is very cheap in proportion to its value. Sumner's elementary work, published at Hartford, 1820, with plates, is constructed upon a more extensive plan than Mr. Locke's. It contains a digest of most of the modern elementary works on botany, lately published in Europe. Both of these authors have very judiciously taken Smith's Elements for their model and standard authority.

I should not omit to mention a very meritorious little work, entitled a **Botanical Catechism**, published at Northampton, 1819. It contains 34 pages, written in the manner of question and answer, and embraces all the essential principles of practical Botany. It is the best book for very young students, particularly for ladies' schools, which has appeared. It was written by Miss Jane K. Welch, of Northampton, Mass.

The very able productions of Muhlenberg, Elliot, Barton, Pursh, Torry, Bigelow and Nuttall, are too well known to require additional notices. This little book of exercises is intended for preparing students to study any or all of them. as well as the works of Linneus, Persoon, Michaux, Smith and others, with pleasure and profit.

Advice respecting the method of conducting a course of Botanical instruction.

At your *introductory lecture*, it is advisable to point out the plan and object of your course. This should be illustrated by analyzing a plain, simple flower, with which each of your auditors should be supplied. Let them be shewn the method by which you arrive at the generic name and general properties of the plant by merely inspecting its flower. Inform them of the fact, that although several hard terms are used in this analysis, it is not necessary ever to encumber the memory with but very few of them. That the language of Botany is so definite and precise, that few terms are sufficient for distinguishing any one plant from all others, which are readily looked out in a Botanical Dictionary, or other vocabulary, while we are going on with the analysis. The unreasonable horrors excited by our forbidding terminology will thus be removed; and your hearers will perceive the object of the science, so far as to be able to judge of the expediency of patronizing you.

During the course it is advisable to have your lectures and examination exercises alternate with each other. Perhaps the former at 7 or 8 o'clock in the morning, and the latter at 5 or 6 o'clock in the afternoon. At your examination meetings, always have the whole class analyze two or three of the plants described in these exercises. Give each a few flowers of the same kind, and assure them it is contained somewhere in this book. Then let each pursue the search alone, and shew you the supposed name, without making it known to the members of the class.

At every examination exercise question all the members of the class, (except those whom you excuse on account of age or for other reasons) upon subjects previously explained. Let the remainder of the time be spent in labelling plants for the herbarium from your dictum. Be sure to have every student make an herbarium containing both exotic and indigenous plants, and cause all the plants to be neatly preserved, and very small labels to be looped upon each specimen.

At your lecture exercise, explain the elementary organs and illustrate them by specimens—also the subdivisions of the calyx, corol, stamen, pistil and pericarp. But confine several of your first lectures to the illustration of the classes and orders—taking no further notice of the subdivisions of the elementary organs, than is essential to these illustrations. Never detain your students one moment with the study of elementary terms, separately from the anlysis of plants. When a term occurs, which is essential to their progress, stop and explain it. Remember that you are to teach the *science of plants*; and that technical names ~~are but~~ a necessary incumbrance, always to be avoided when it is possible to dispense with them.

After your students have made considerable progress in analyzing plain simple plants, your lectures should commence with those families of plants whose descriptions require a peculiar application of the language of Botany. For example, the proper grasses are chiefly distinguished by the number of flowers to each glume calyx, forms of valves, spikelets, &c. Plants of the 1st section of the 1st order, of the 5th class, by the form and throat of the corol, &c. The umbelliferous plants by the fruit. The plants of the 14th class by the form of the lips of the corol. Plants of the 18th class by the calyx, egret and receptacle, &c. Every thing which requires a departure from the plain, simple course of analysis in the most simple flowers, should be explained in your lectures and illustrated by specimens.

The physiology of vegetation requires very little labor and still less experience. It is therefore harped upon by every ignorant blockhead, who can read a book and transcribe its contents. I advise you not to give more than four or five lectures in a whole course, relating to that subject. And let these embrace subjects the most essential to your purpose. Make practical botanists of your pupils, and they can then read physiological botany in their closets to advantage.

I have found no exercise so effectual as that of writing out full descriptions of plants. Direct your pupils each to select a plant, and to bring in the specimen with a written description for your examination. Let the order of the description follow the arrangement adopted in the grammar. First the kind of calyx, next the corol, &c. proceeding to the appendages. By this exercise, habits of accuracy will be acquired, which you can never inculcate by any other method.

No particular mode of questioning pupils is necessary to be prescribed. The proper questions will naturally present themselves to every reflecting teacher. Perhaps the following specimens may not be useless.

A Precedent for questioning respecting Classes.

Teacher. On what organs are the characters of the classes founded?

Pupil. The stamens, excepting the 22d class.

T. What circumstances respecting these organs are noticed in distinguishing the classes?

P. Number, proportion, connexion and position.

T. What classes are characterized by number only?

P. The eleven first classes.

T. Which by number and position?

P. The twelfth and thirteenth.

T. Which by number and proportion?

P. The fourteenth and fifteenth.

T. Which by connexion only?

P. The sixteenth and seventeenth.

T. Which by number and connexion?

P. The eighteenth.

T. Which by position only?

P. The nineteenth, twentieth and twenty-first.

T. How are plants of the 22d class distinguished from the other classes?

P. By general family habits.

Questions upon the orders, &c. may be arranged upon the same principle; and these greatly extended.

A Precedent for questioning in the Analysis of Plants.

The common Mullein.

T. To what class does it belong? Why? To what order? Why? To what section? What is the generic name? [suppose the answer is verbascum] Why is the corol *wheel-form?* What do you mean by *irregular?* How are the *stamens declined?* Shew me the *cells* and *valves* of the *capsule.*

NOTE.—There are frequent cases where characters are given which cannot present themselves at the first flowering; as in the mullein the inflexed edges of the valves will not appear. In most cases of this kind, there will be found matured capsules, &c. while some flowers are still in bloom on the same plant. But there are cases where the description drawn from the matured state of the organ is a factitious, not an essential character. Factitious characters often assist us by directing to the proper course of investigation by some striking part. At other times they assist in determining the plant after its flowering is past. But the essential characters must always be made out, before we venture to name our plant.

T. Which species of the verbascum is this? [suppose the answer is *thapsus*, which species will be found described under the generic name verbascum, in the labelling catalogue.] What do you understand by a decurrent leaf? Point out the down on the leaves. Why do you consider the inflorescence a cylindric spike? Turn to the natural order of Linneus to which this plant belongs. What are the general medical properties of that order? Turn to the vocabulary and see wha tis meant by *narcotic* and what by *antiscorbutic*.

Note.—In labelling plants, the artificial class and order, and the numbers of the natural orders of both Linneus and Jussieu should be written on the labels in the order in which they stand in the labelling catalogue. Because every botanist may have occasion to arrange plants by all these methods. The artificial method is best, when we intend an herbarium for an assistant in looking out plants. The natural orders of Linneus and Jussieu will bring together plants of similar habits and properties. Jussieu's method is merely an improvement upon that of Linneus, by a subdivision of some of the orders of Linneus. Medical students should arrange their plants by one of these natural methods. Or if they could spare time to collect duplicates, so as to arrange one set by the artificial classes, and another by one of the natural methods, it would be still more convenient.

It seems to be a prevailing opinion among those who have no experience in this science, that access to a *Botanical garden* is necessary for a student in botany. This is a great mistake. A Botanical garden is convenient for cultivating plants, and is a pleasant acquisition to a medical institution; but every experienced teacher would prefer wild plants, selected from the fields and forests, for the purpose of instructing his pupils.

Troy, Sept. 1*st*, 1820.

GRAMMAR OF BOTANY.

ELEMENTARY ORGANS.

Every plant is either Phenogamous, or Cryptogamous.

Phenogamous plants have their stamens and pistils sufficiently manifest for examination.

Cryptogamous plants either lose the staminate organs before they become manifest, or they are too minute for inspection.

The *Classes, Orders* and *Genera* of the Linnean system, are founded wholly on the seven elementary organs of fructification.

These are,

1. *Calyx.* The outer or lower part of the flower, generally not coloured.*
2. *Corol.* The coloured blossom, within or above the calyx.
3. *Stamens.* The mealy or glutinous knobs in the flower, with or without filamentous organs.
4. *Pistil.* The central organ of the flower, whose base becomes the pericarp and seed.
5. *Pericarp.* The covering of the seed, whether pod, shell, bag, or pulpy substance.
6. *Seed.* The essential part containing the rudiment of a new plant.
7. *Receptacle.* The base which sustains the other six parts, being at the end of the flower-stem.

SUBDIVISIONS OF THE CALYX.

Every Calyx is either *monophyllous*, consisting of one leaf; or *polyphyllous*, consisting of more than one leaf.

1. *Perianth.* That calyx which adjoins and surrounds the other parts of the flower, as of the apple, rose, &c. About two thirds of all plants have perianths.
2. *Involucre.* That calyx which comes out at some distance below the flower, and never encloses it. It is

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* In the language of Botany, any part of a plant is not coloured when it is green; as the calyx of the apple is said not to be coloured, because it is green; and that of the nasturtion is coloured, because it is not green.

commonly at the origin of the peduncles of umbels, and sometimes attached to other aggregate flowers.

Involucres are either *universal,* placed at the origin of the universal umbel, as in caraway, lovage, &c.; or *partial,* placed at the origin of a particular umbel, as in coriander; or *proper,* placed beneath a single flower.

3. *Spathe.* A kind of membrane, which at first encloses the flower, and after it expands is left at a distance below it, as daffodil, onion, Indian turnip.
4. *Glume,* That kind of calyx which is composed of one two, or three valves or scales, commonly transparent at margin, and often terminated by a long awn or beard. All grasses have glume calyxes.
5. *Ament.* An assemblage of flower-bearing scales, arranged on a slender thread or receptacle; each scale generally constituting the lateral calyx of a flower, as in the willow, chesnut, pine, &c.
6. *Calyptre.* The cap or hood of pistillate mosses, resembling in form and position an extinguisher set on a candle. Conspicuous in the common hair-cap moss.
7. *Volva.* The ring or wrapper at first enclosing the pileus or head of a fungus; and which, after the plant has arrived to maturity, contracts and remains on the stem or at the root.

SUBDIVISIONS OF THE COROL.

Every corol is either *monopetalous,* consisting of one petal or flower-leaf; or *polypetalous,* consisting of more than one.

Monopetalous Corols are,

1. *Bell-form.* Hollowed out within the base, and generally diverging upwards, as Canterbury bells, gentian, &c.
2. *Funnel-form.* With a tubular base, and the border opening gradually in the form of a tunnel, as the thorn-apple, morning-glory.
3. *Salver-form.* Having a flat spreading limb or border, proceeding from the top of a tube, as lilac, trailing arbutus, &c.
4. *Wheel-form.* Having a spreading border without a tube, or with an exceeding short one, as borage, laurel.
5. *Labiate* A labiate corol is divided into two general parts, somewhat resembling the lips of a horse or other animal. Labiate corols are either *personate,* (with the

throat muffled,) as snap-dragon; or *ringent*, (with the throat open,) as mint, motherwort, catnip, monkey-flower.

Polypetalous Corols are,

1. *Cruciform.* Consisting of four equal petals spreading out in the form of a cross, as radish, cabbage, mustard, &c.
2. *Caryophylleous.* Having five single petals, each terminating in a long claw, enclosed in a tubular calyx, as pink, catchfly, cockle, &c.
3. *Liliaceous.* A corol with six petals, spreading gradually from the base, so as altogether to exhibit a bell-form appearance, as tulip, lily, &c.
4. *Rosaceous* A corol formed of roundish spreading petals without claws, or with extremely short ones, as rose, apple, strawberry, &c.
5. *Papilionaceous.* A flower which consists of a banner, two wings and a keel, as pea, clover, &c.

If a corol agrees with none of the above descriptions it is called *anomalous.*

SUBDIVISIONS OF THE STAMEN.

1. *Anther.* The knob of the stamen, which contains the pollen; very conspicuous in the lily, &c. Never wanting.
2. *Pollen.* The dusty or mealy substance contained in the anthers. Never wanting.
3. *Filament.* That part of the stamen which connects the anther with the receptacle, calyx, or pistil. Often wanting.

SUBDIVISIONS OF THE PISTIL.

1. *Stigma.* The organ which terminates the pistil; very conspicuous in the lily, and hardly distinguishable in the Indian corn. Never wanting.
2. *Germ.* That part of the pistil which in maturity becomes the pericarp and the seed, as in the cherry, pompion. Never wanting.
3. *Style.* That part of the pistil which connects the stigma and the germ: very conspicuous in the lily. Wanting in the tulip and some other flowers.

SUBDIVISIONS OF THE PERICARP.

1. *Silique.* That kind of pod which has a longitudinal partition, with the seeds attached alternately to its opposite edges, as radish, cabbage, &c.

2. *Legume.* A pod without a longitudinal partition, with the seeds attached to one suture only, as the pea, &c.
3. *Capsule.* That kind of pericarp which opens by valves or pores and becomes dry when ripe, as the poppy, which opens by pores, and the mullein by valves.
4. *Drupe.* That kind of pericarp which consists of a thick fleshy or cartilaginous coat enclosing a nut or stone, as in the cherry, in which it is said to be *berry-like*, and in the walnut, where it is *dry*.
5. *Pome.* A pulpy pericarp without valves, which contains within it a capsule, as apples, quinces, &c.
6. *Berry.* A pulpy pericarp enclosing seeds without any capsule, as currant, grape, cucumber, melon.
7. *Strobile.* An ament with woody scales, as the fruit of the pine.

SUBDIVISIONS OF THE SEED.

1. *Cotyledon.* The thick fleshy lobes of seeds; very manifest in beans, whose cotyledons grow out of the ground in the form of two large suculent leaves. Many plants, as Indian corn, wheat, the grasses, &c. have but one cotyledon.
2. *Corcle.* The rudiment of the future plant, always proceeding from the cotyledon: easily distinguished in chesnuts, acorns, &c.
3. *Tegument.* The skin or bark of seeds, it separates from pease, beans, Indian corn, &c. on boiling.
4. *Hilum.* The external mark or scar on seeds, by which they were affixed to their pericarps. In beans, and the like, it is called the eye,

SUBDIVISIONS OF THE RECEPTACLE.

1. *Proper.* That which belongs to one flower only.
2. *Common.* That which connects several distinct florets, as in the sunflower, daisy, teasel,
3. *Rachis.* The filiform receptacle, connecting the florets in a spike, as in the heads of wheat.
4. *Columella.* The central column in a capsule to which the seeds are attached.
5. *Spadix.* An elongated receptacle proceeding from a spathe, as Indian turnip.

GENERAL DIVISIONS OF FLOWERS.

1. *Simple.* Having a single flower on a receptacle, as in the quince, tulip, &c.

2. *Aggregate.* Having on the same receptacle, several flowers, whose anthers are not united, as teasel, button-bush, &c.
3. *Compound.* Having several florets on the same receptacle, with their anthers united, as sun-flower, china-aster, &c.
4. *Staminate.* Having stamens only, as those in the tassels of Indian corn.
5. *Pistillate.* Having pistils only, as the fertile flower of the cucumber.
6. *Perfect.* Having both stamens and pistils.
7. *Neutral.* Having neither stamens nor pistils.

INFLORESCENCE.

The manner in which Flowers are situated on Plants.

1. *Whorl.* In which the flowers grow around the stem in rings one above another, as motherwort, catnip.
2. *Raceme.* Having the florets on short pedicels, arranged along a general peduncle, as currants.
3. *Panicle.* Having some of the pedicels, along the general peduncle of the raceme, divided, as in oats.
4. *Thyrse.* A panicle contracted into a compact, somewhat ovate form, as in lilac.
5. *Spike.* Having the florets sessile, or nearly so, on the elongated general receptacle, as wheat, mullein, &c.
6. *Umbel.* Having the flower-stems diverging from one place like the braces of an umbrella, bearing florets on their extremities, as carrot, dill, fennel, &c.
7. *Cyme.* It agrees with the umbel in having its general flower-stems spring from one centre, but differs in having those stems irregularly subdivided, as elder, &c.
8 *Corymb.* In the corymb the peduncles take their rise from different heights along the main stem; but, the lower ones being longer, they form nearly a level top, as yarrow.
9. *Fascicle.* In general external appearance it resembles the umbel, but the foot-stalks are irregular in their origin and subdivisions, as sweet-william.
10. *Head.* In this the flowers are heaped together in a globular form without peduncles, or with very short ones, as clover.

ROOTS AND HERBAGE.

The substance of Roots and Herbage consists of:

1. *Cuticle.* The thin outside coat of the bark, which seems to be without life, and often transparent. Very conspicuous on some kinds of birch, cherry, currant-bushes, &c.
2. *Cellular integument.* The parenchymous substance between the cuticle and bark, often green. Easily seen in the elder, &c. after removing the cuticle.
3. *Bark.* The inner strong fibrous part of the covering of vegetables.
4. *Camb.* The mucilaginous or gelatinous substance, which, in the spring of the year, abounds between the bark and the wood of trees.
5. *Wood.* The most solid part of the trunks and roots of herbs and trees.
6. *Pith.* The spongy substance in the centre of the stems and roots of most plants. Large in the elder.

ROOTS are the descending parts of vegetables, and are *annual, biennial,* or *perennial.* They are of seven kinds.

1. *Branching.* Having the whole root divided into parts as it proceeds downwards, as the oak, apple-tree, &c.
2. *Fibrous.* The whole root consisting of filiform parts, originating immediately from the base of the stem, as many of the grasses.
3. *Creeping.* Extending itself horizontally, and sending out fibrous radicles, as gill-overground, mint, &c.
4. *Spindle.* Thick at the top, and tapering downward, as carrot, parsnip, &c.
5. *Tuberous.* Roots which are thick and fleshy, but not of any regular globular form. They are *knobbed,* as the potatoe; *oval,* as those of orchis; *abrupt,* as the birdsfoot-violet; or *fascicled,* as asparagus.
6. *Bulbous.* Fleshy and spherical. They are either *solid,* as the turnip; *coated,* as the onion; or *scaly,* as the garden lily.
7. *Granulated.* Consisting of several little knobs in the form of grains, strung together along the sides of a filiform radicle, as the wood-sorrel.

HERBAGE is all the plant except the *root* and *fructification.* It includes *stem, leaves* and *appendages.*

STEMS.

1. *Tidge.* The ascending herbage-bearing trunk or stem of all phenogamous plants, except the grasses, as the trunk of the oak, the grape vine, the mullein stalk.
2. *Culm.* The stalk or stem of the grasses, as wheat-straw, sugar-cane, &c.
3. *Scape.* That kind of flower-bearing stem which springs immediately from the root, and is destitute of leaves, as dandelion.
4. *Peduncle.* The flower-bearing stem which springs from any part of the stem or branches, as apple, cucumber, &c.
5. *Petiole.* The foot-stalk of the leaf.
6. *Frond.* Applied entirely to cryptogamous plants. It includes the herbaceous, leathery, crustaceous, or gelatinous substance, from which the fruit is produced.
7. *Stipe.* The stem of a fern, of a fungus, of compound egret, and of a pericarp when elevated from the receptacle, as of maiden-hair; of a mushroom; of a dandelion; and of spurge caper.

LEAVES *are evergreen or deciduous.*

FORMS OF SIMPLE LEAVES.

1. *Orbicular.* Nearly circular, as the leaves of red clover, of cabbage, &c.
2. *Ovate.* Resembling the longitudinal section of an egg, the base being broader than the extremity. One of the most common forms of leaves.
3. *Oval.* Differing from ovate in having both ends equal in breadth.
4. *Oblong.* The length more than twice the breadth, and the sides somewhat parallel.
5. *Obovate.* Ovate with the narrowest end towards the stem, as those of primrose and daisy
6. *Cordate.* Heart-shaped, the hind-lobes being rounded, as lilac.
7. *Obcordate.* Cordate, with the apex or narrowest end towards the stem.

8. *Kidney-form.* Hollowed in at the base, with rounded lobes and rounded ends, as mallows.
9. *Lanceolate.* In the form of the ancient lance, tapering from near the base to the apex, and of some length, as the leaves of most of the willows, of ribwort, &c.
10. *Linear.* Continuing of the same width through nearly the whole length; usually pointed at one or both ends.
11. *Awlform.* Linear at the base, and becoming more or less curved at the point.
12. *Acuminate.* Any kind of leaf terminating more or less suddenly in a point turned towards one edge of the leaf.
13. *Arrow-form.* Shaped like an arrowhead, differing from cordate in having the hind-lobes more or less acute.
14. *Halbert-form.* Hastate. Shaped like an halbert, as field sorrel, creeping snapdragon.
15. *Guitar-form.* Oblong, broadish near the base and contracted at the sides.
16. *Lobed.* Deeply parted, and the divisions large, with rounded sides or ends.
17. *Palmate.* Resembling the hand with the fingers spread, as horse-chesnut.
18. *Pedate.* Resembling a bird's foot.
19. *Sinuate.* Having the margin hollowed with deep sinuses or bays.
20. *Pinnatifid,* Divided transversely by deep incisions, not extending to the midrib.
21. *Lyrate.* Pinnatifid, with the largest division at the apex, and diminishing from thence to the base, as hedge-mustard.
22. *Runcinate.* Pinnatifid, with the divisions pointing backwards, as dandelion.

EDGES OF LEAVES.

23. *Serrate.* Having sharp notches resembling saw-teeth along the margin, and pointing towards the apex, as those of cherry-trees, roses, &c.
24. *Toothed.* Having projections from the margin of its own substance, which are neither serratures, nor crenatures, as those of blue-bottle.
25. *Crenate.* Having uniform notches on the margin of the leaf, which do not incline either towards the apex, or the base, as gill-overground.

ENDS OF LEAVES.

26. *Emarginate.* Notched at the termination of the midrib.
27. *Retuse.* Emarginate with a shallow sinus.
28. *Obtuse.* Having the apex of the leaf more or less rounded.
29. *Acute.* Terminating in an angle, that is not rounded.

SURFACES OF LEAVES.

1. *Hairy.* Having distinct strait hairs.
2. *Downy.* Covered with fine cotton-like down.
3. *Silky.* Covered with soft close-pressed hairs.
4. *Bristly.* Set with stiff hairs.
5. *Ciliate.* Edged with parallel hairs or bristles, resembling eye-lashes.
6. *Nerved.* Furnished with midrib-like fibres running from the base to the apex.
7. *Veined.* Having tendinous fibres variously branched.

POSITIONS OF LEAVES.

1. *Decurrent.* When two edges of the leaf extend along the stem below the place of insertion.
2. *Clasping.* Sessile with the base more or less heart-form, so as entirely or in part to surround the stem.
3. *Sheathing.* With the leaf prolonged down the stem, so as to cover it, in the manner of the grasses.
4. *Perfoliate.* Having the stem passing through the leaf.
5. *Connate.* Leaves opposite, with theirbases united.
6. *Peltate.* With the foot-stalk attached to the lower side of the leaf, so as to resemble a shield.
7. *Opposite.* Standing at the same height with base against base.
8. *Whorled.* Surrounding the stem in horizontal rings or rows.
9. *Imbricate.* Lying over each other like shingles on a roof.
10. *Fascicled.* Growing in bunches from the same point.
11. *Radical.* Proceeding immediately from the root.

COMPOUND LEAVES.

1. *Ternate.* Having three leafets proceeding from the end of one petiole.
2. *Biternate.* Twice ternate; when the petiole is ternate, and each division bears three leafets.
3. *Triternate.* Three times ternate.

4. *Pinnate.* With distinct leafets arranged on opposite sides of the same petiole, as locust.
5. *Bipinnate* Twice pinnate.
6. *Tripinnate.* Thrice pinnate.
7. *Interruptedly-pinnate.* Having smaller leafets dispersed among the larger, as potatoe.

APPENDAGES.

1. *Stipule.* A leafet or scale at or near the base of a petiole.
2. *Bract.* A leaf among or near the flowers, different from the other leaves of the plant.
3. *Thorn.* A sharp process from the woody part of a plant.
4. *Prickle.* A sharp process from the bark, as those on raspberry bushes, &c.
5. *Sting.* Hair-like processes mostly from the leaves, as nettles.
6. *Gland.* A roundish, generally minute, appendage to different parts of plants.
7. *Tendril.* The filiform appendage by which climbing plants support themselves on their bodies.

NUMERALS.

The Latin and Greek numerals are so frequently compounded with other words by botanical writers, that an English student ought to commit them to memory, as here laid down. *Eis, Treis, &c.* are not used.

LATIN.		NOS.	GREEK.	
Unus		1	Monos	single.
Bis	twice,	2	Dis	twice.
Tres		3	Treis	thrice.
Quatuor		4	Tettares	
Quinque		5	Pente	
Sex		6	Ex (pronounced hex)	
Septem		7	Epta (pronounced hepta)	
Octo		8	Okto	
Novem		9	Ennea	
Decem		10	Deka	
Undecem		11	Endeka	
Duodecem		12	Dodeka	
Tredecem		13	Dekatreis	
Quatuordecim		14	Dekatettares	
Quindecim		15	Dekapente	
Sexdecim		16	Dekaex	
Septendecim		17	Dekaepta	
Octodecim		18	Decaokto	
Novendecim		19	Decaennea	
Viginti		20	Eikosi	
Multus		Many	Polus	

LINNEAN SYSTEM OF VEGETABLES.

All Vegetables are divided into twenty-two* CLASSES. These CLASSES are divided into ORDERS. ORDERS are divided into GENERA. GENERA are divided into SPECIES. SPECIES are frequently changed into *varieties.* Varieties, however, are more properly within the province of the Gardener, than of the Botanist ; at least the method of procuring varieties.

When a Botanist finds a plant which he never saw before and wishes to know its name and uses ; he proceeds as follows.

1. He takes the unknown flower in his hand, (no unknown plant can be ascertained without the flower,) and compares its parts with the description of each class, until he finds the class to which it belongs,

2. He then goes to the orders of that class and finds its order in the same way.

3. If the order in which he finds his plant is sub-divided into sections, he reads the characters of the sections also.

4. Next he goes to the genera of that order or section, and reads their descriptions, until he finds the genus to which it belongs.

5. At last he looks over the species of that genus, until he finds the exact description of his plant.

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*Linneus divided them into 24 classes. But farther discoveries, since his death, have proved the classes Polyadelphia and Polygamia to be too uncertain and variable to be any longer retained. Persoon, therefore, and other eminent botanists have rejected them.

LINNEAN CLASSES.

1. *Monandria*, one stamen in the flower.
2. *Diandria*, 2 stamens.
3. *Triandria*, 3 stamens.
4. *Tetrandria*, 4 stamens.
5. *Pentandria*, 5 stamens.
6. *Hexandria*, 6 stamens.
7. *Heptandria*, 7 stamens.
8. *Octandria*, 8 stamens.
9. *Enneandria*, 9 stamens.
10. *Decandria*, 10 stamens.
11. *Dodecandria*, 12 to 19 stamens.
12. *Icosandria*, about 20, or more, standing on the calyx.
13. *Polyandria*, always 20 or more, on the receptacle.
14. *Didynamia*, 4 stamens, 2 of them uniformly the longest.
15. *Tetradynamia*, 6 stamens, 4 of them uniformly the longest.
16. *Monadelphia*, stamens united by their filaments in one set, anthers remaining separate.
17. *Diadelphia*, stamens united by their filaments in two sets, (sometimes in one set,) flowers papilionaceous.
18. *Syngenesia*, stamens 5, united by their anthers in one set, flowers compound.
19. *Gynandria* stamens stand on the germ, style, or stigma, separate from the base of the calyx and corol.
20. *Monœcia*, stamens and pistils in separate flowers, on the same plant.
21. *Diœcia*, stamens and pistils on separate plants.
22. *Cryptogamia*, stamens and pistils so obscure that the plants can only be classed by natural families.

ORDERS OF EACH CLASS.

	1st.	2d.	3d.	4th.	5th.	6th.	7th.	8th.	10th.	13th.	16th.
Class 1	Mon.	Dig.	——	——	——	——	——	——	——	——	——
2	Mon.	Dig.	Tri.	——	——	——	——	——	——	——	——
3	Mon.	Dig.	Tri.	——	——	——	——	——	——	——	——
4	Mon.	Dig.	——	Tet.	——	——	——	——	——	——	——
5	Mon.	Dig.	Tri.	Tet.	Pen.	——	——	——	——	——	——
6	Mon.	Dig.	Tri.	Tet.	——	Hex.	——	——	——	——	——
7	Mon.	Dig.	——	Tet.	——	——	Hep.	——	——	——	——
8	Mon.	Dig.	Tri.	Tet.	——	——	——	——	——	——	——
9	Mon.	——	Tri.	——	——	Hex.	——	——	——	——	——
10	Mon.	Dig.	Tri.	——	Pen.	——	——	——	——	——	——
11	Mon.	Dig.	Tri.	Tet.	Pen.	——	——	——	——	——	——
12	Mon.	——	——	——	Pen.	——	——	——	——	Pol.	——
13	Mon.	Dig.	——	——	Pen.	——	——	——	——	Pol.	——
14	Gym.	Ang.	——	——	——	——	——	——	——	——	——
15	Silic.	Siliq.	——	——	——	——	——	——	——	——	——
16	——	——	Tri.	——	Pen.	——	——	——	Dec.	Pol.	——
17	——	——	——	——	——	Hex.	——	Oct.	Dec.	——	——
18	Æq.	Sup.	Frus.	Nec.	Seg.	——	——	——	——	——	——
19	Mon.	Dia.	——	——	Pen.	Hex.	——	——	——	——	——
20	Mon.	Dia.	Tri.	Tet.	Pen.	Hex.	——	——	——	Pol.	Mon.
21	——	Dia.	Tri.	Tet.	Pen.	Hex.	——	Oct.	——	Pol.	Mon.
22	Filices.	Musci.	Hepaticae.	Algae.	Lichenus.	Fungi.	——	——	——	——	——

Note. The numbers at the head of this page are used to express the orders directly under them.

EXPLANATIONS FOR THE PRECEDING PAGE.

OF ORDERS.

1. Mon. Monogynia, 1 style, or 1 sessile stigma.
2. Dig. Digynia, 2 styles, &c.
3. Tri. Trigynia, 3 styles, &c.
4. Tet. Tetragynia, 4 styles, &c.
5. Pen. Pentagynia, 5 styles, &c.
6. Hex. Hexagynia, 6 styles, &c.
7. Hep. Heptagynia, 7 styles, &c.
10. Dec. Decagynia, 10 styles, &c.
13. Pol. Polygynia, more than 10 styles, &c.

1 of C. 14. Gym. Gymnospermia, seeds naked.
2 of C. 14. Ang. Angiospermia, seeds in capsules.
1 of C. 15. Silic. Siliculosa, having pods whose length and breadth are nearly equal.
2 of C. 15. Siliq. Siliquosa, having pods whose lengths are more than double their breadths.

In the 16th, 17th, 19th, 20th, 21st classes, the names and characters of preceding classes, are taken for orders. As Mon. Monandria. Dia. Diandria. Tri. Triandria. Tet. Tetrandria. Pen. Pentandria. Hex. Hexandria. Oct. Octandria. Dec. Decandria. Pol. Polyandria. Mon. Monadelphia.

In the 18th class. 1. Æq. Polygamia Æqualis. 2. Sup. Polygamia Superflua. 3. Frus. Polygamia Frustranea. 4. Nec. Polygamia Necessaria. 5. Seg. Polygamia Segregata.

The 1st order in the 18th class is distinguished by having *all the florets* perfect. The 2d, by having those of the *disk* perfect, while those of the *ray* are pistillate. The 3d, by having those of the *disk* perfect, while those of the *ray* are neutral. The 4th, by having those of the *disk* staminate, while those of the *ray* are pistillate. The 5th, by having the florets all perfect, while each floret has a *perianth* of its own.

In the 22d class, the orders are distinguished by natural family characters. 1. *Filices,* (ferns) which bear fruit on the back of the leaves, or in which some part of the leaves seem as it were metamorphosed into a kind of fruit-bearing-spike. The appendix to this order includes the Pteroides, which bear fruit on a peculiar appendage. 2. *Musci,* (mosses) which bear, on leafy stems and branches, one-celled capsules, opening at the top, where they are covered by a peculiar lid. 3. *Hepaticae,* (liverworts) which bear, on herbaceous fronds, four-celled capsules opening with four valves. 4. *Algae,* (seaweeds, &c.) which bear in an aquatic or gelatinous frond, vesiculous or filamentous fruit. 5. *Lichenes,* (lichens) which bear fruit on fibrous, compact or gelatinous fronds contained in clefts, spangles, puffs, buttons, tubercles, hollows, cellules, globules, shields, targets, orbs, or knobs. 6. *Fungi,* (mushroon, &c.) which are destitute of herbage, consisting of a spongy, pulpy, leathery, or woody substance, and bear fruit in a naked dilated membrane, or within the substance of the plant.

GENERAL RULES FOR AVOIDING POISONS.

Plants not poisonous.

1. Plants with a *glume* calyx, never poisonous. As Wheat, Indian-corn, Foxtail-grass, Sedge-grass, Oats. Linneus.

2. Plants whose stamens *stand on the calyx,* never poisonous. As Currant, Apple, Peach, Strawberry, Thorn. Smith, page 392.

3. Plants with *cruciform* flowers, rarely if ever poisonous. As Mustard, Cabbage, Watercress, Turnip. Smith, page 487.

4. Plants with *pupilionaceous* flowers, rarely if ever poisonous. As Pea, Bean, Locust-tree, Wild-indigo, Clover. Smith, page 446.

5. Plants with *labiate* corols bearing seeds without pericarps, never poisonous. As Catmint, Hyssop, Mint, Motherwort, Marjoram. Smith, page 434.

6. Plants with *compound* flowers, rarely poisonous. As Sunflower, Dandelion, Lettuce, Burdock. Milne.

Poisonous plants.

1. Plants with 5 stamens and one pistil, with a dull-coloured *lurid* corol, and of a nauseous sickly smell, always poisonous. As Tobacco, Thorn-apple, Henbane, Nightshade. The degree of poison is diminished where the flower is brighter coloured and the smell is less nauseous. As potatoe is less poisonous, though of the same genus with nightshade. Smith, page 415.

2. *Umbelliferous plants* of the aquatic kind and of a nauseous scent are always poisonous. As Water-hemlock, Cow-parsley. But if the smell be pleasant, and they grow in dry land, they are not poisonous. As Fennel, Dill, Coriander, Sweet-cicely. Smith, page 416.

3. Plants with *labiate* corols, and seeds in capsules, frequently poisonous. As Snapdragon, Foxglove.

4. Plants from which issues a *milky juice* on being broken are poisonous, unless they bear compound flowers. As Milkweed, Dogbane, Milne's Contortæ and Lactescentia.

5. Plants having any *appendage* to the calyx or corol, and twelve or more stamens, generally poisonous. As Columbine, Crowfoot. Linneus.

Most general Rule.

Plants with few stamens, not frequently poisonous, except the number be five; but if the number be 12 or more, and the smell nauseous, heavy and sickly, the plants are generally poisonous. Milne's Multisiliquæ and Sapor.

Note.—Many plants possess some degree of the narcotic principle, which are still by no means hurtful.

NATURAL ORDERS OF LINNEUS.

Plants of the same natural order possess similar medical qualities. But the scent of plants must be taken into consideration; as all nauseous-scented umbelliferous plants are poisonous, while the sweet-scented are pleasant stomachics, &c.

"Several plants characterized by particular virtues possess it to such a degree of strength or weakness, that we may reasonably expect very different effects from this difference of intensity in the same quality." Milne. See qualities.

1. *Palmae.* Farinaceous diet.
2. *Piperitae.* Tonics and stomachics.
3. *Calamariae.* Coarse cattle fodder and tonics.
4. *Gramina.* Farinaceous diet and cattle fodder.
5. *Tripetaloideae.* Tonics and rough cattle fodder.
6. *Ensatae.* Antiscorbutics and Tonics.
7. *Orchideae.* Farinaceous diet and Stomachics.
8. *Scitamineae.* Warming stomachics.
9. *Spathaceae.* Secernant stimulants.
10. *Coronariae.* The nauseous-scented and bitter are antiscorbutic and cathartic, the others Emollient.
11. *Sarmentaceae.* Tonics and Secernant stimulants.
12. *Oleraceae,* or *Holeraceae.* If nauseous, Cathartic; others, mild stimulants and nutrientics.
13. *Succulentae.* Antiscorbutic and Emollient.
14. *Gruinales.* Tonics and Refrigerants.
15. *Inundatae.* Astringents.
16. *Calyciflorae.* Astringents and Refrigerants.
17. *Calycanthemae.* Astringents.
18. *Bicornes* Astringents.
19. *Hesperides.* Astringent and stomachic.
20. *Rotaceae.* Tonics.
21. *Preciae.* Astringents.

22. *Cariophilleae.* Astringents and Secernant stimulants.
23. *Trihilatae.* Tonics and Nutrientics.
24. *Corydales.* Narcotic and Antiscorbutic.
25. *Putamineae.* Detergent and Antiscorbutic.
26. *Multisiliquae.* Cathartic and Caustic.
27. *Rhœadeae.* Anodyne and Antiscorbutic.
28. *Luridae.* Narcotic and Antiscorbutic.
29. *Campanaceae.* Cathartics and Secernant stimulants.
30. *Contortae.* Cathartics and Antiscorbutics.
31. *Vepreculae* Antiscorbutic and Emetic.
32. *Papilionaceae.* Emollient, Diuretic, Nutrientic.
33. *Lomentaceae.* Emollient, Astringent, Cathartic.
34. *Cucurbitaceae.* Cathartic and Refrigerant.
35. *Senticosae.* Astringent and Refrigerant.
36. *Pomaceae.* Refrigerants.
37. *Columniferae.* Emollient.
38. *Tricoccae.* Cathartic.
39. *Siliquosae.* Diuretic, Antiscorbutic, Nutrientic.
40. *Personatae.* Deobstruents and Cathartics.
41. *Asperifoliae.* Astringents and Deobstruents.
42. *Verticillatae.* Stomachics and Astringents.
43. *Dumosae.* Tonic and Cathartic.
44. *Sepiariae.* Astringent.
45. *Umbellatae.* Stomachic and Narcotic.
46. *Hederaceae.* Tonics and Refrigerants.
47. *Stellatae.* Tonics and Deobstruents.
48. *Aggregatae.* Tonics and Secernant stimulants.
49. *Compositae.* Tonics and Secernant stimulants.
50. *Amentaceae.* Astringents.
51. *Coniferae.* Tonics and Stomachics.
52. *Coadunatae.* Tonics.
53. *Scabridae.* Astringents.
54. *Miscellaneae.* Their qualities are various.
55. *Filices.* Secernant stimulants.
56. *Musci.* Cathartics and Secernant stimulants.
57. *Algae.* Tonics.
58. *Fungi.* Tonics and Cathartics.

Natural Orders of Jussieu.

Jussieu's System is a very great improvement upon that of Linneus. According to the maxim of Linneus and others, the student has only to acquaint himself with the virtues of one or two plants in an order, to be able to form some general opinion of all other plants in that order.

1st Division. *Seeds without lobes or cotyledons.*

1. *Fungi.*
2. *Algae.*
3. *Hepaticae.*
4. *Musci.*
5. *Filices.*
6. *Naiades.*

2d Division. *Seeds with a single lobe, or one cotyledon.*

7. *Aroideae.*
8. *Typhae.*
9. *Cyperoideae.*
10. *Gramineae.*
11. *Palmae.*
12. *Asparagi.*
13. *Junci.*
14. *Liliaceae.*
15. *Bromelia.*
16. *Asphodeli.*
17. *Narcissi.*
18. *Irides.*
19. *Musae.*
20. *Cannae.*
21. *Orchideae.*
22. *Hydrocharides.*

3d Division. *Seeds with two lobes, or two cotyledons.*

23. *Aristolochae.*
24. *Æleagni.*
25. *Thymeleae.*
26. *Proteae.*
27. *Lauri.*
28. *Polygoneae.*
29. *Atriplices.*
30. *Amaranthi.*
31. *Plantagines.*
32. *Nyctagines.*
33. *Plumbagines.*
34. *Lysimachiae.*
35. *Pediculares.*
36. *Acanthi.*
37. *Jasmineae.*
38. *Vitices.*
39. *Labiatae.*
40. *Scrophulariae.*
41. *Solaneae.*
42. *Boragineae.*
43. *Convolvuli.*
44. *Polemonia.*
45. *Bignoniae.*
46. *Gentianae.*
47. *Apocyneae.*
48. *Sapotae.*
49. *Guaiacanae.*
50. *Rhododendra.*
51. *Ericae.*
52. *Campanulaceae.*
53. *Cichoraceae.*
54. *Cinarocephalae.*
55. *Corymbiferae.*
56. *Dipsaceae.*
57. *Rubiaceae.*
58. *Caprifolia.*
59. *Araliae.*
60. *Umbelliferae.*
61. *Ranunculaceae.*
62. *Papaveraceae.*
63. *Cruciferae.*
64. *Capparides.*
65. *Sapindi.*
66. *Acera.*
67. *Malpighiae.*
68. *Hyperica.*
69. *Guttiferae.*
70. *Aurantia.*
71. *Meliae.*
72. *Vites.*
73. *Gerania.*
74. *Malvaceae.*
75. *Magnoliae.*
76. *Annonae.*
77. *Menisperma.*
78. *Berberides.*
79. *Tiliaceae.*
80. *Cisti.*
81. *Rutaceae.*
82. *Caryophylleae.*
83. *Sempervivae.*
84. *Saxifraga.*
85. *Cacti.*
86. *Portulaceae.*
87. *Ficoideae.*
88. *Onagrae.*
89. *Myrtus.*
90. *Melastomae.*
91. *Salicariae.*
92. *Rosaceae.*
93. *Leguminosae.*
94. *Terebinthi.*
95. *Rhamni.*
96. *Euphorbiae.*
97. *Cucurbitaceae.*
98. *Urticae.*
99. *Amentaceae.*
100. *Coniferae.*

PHYSIOLOGY OF PLANTS.

Phytology, or the physiology of vegetables, may properly be divided into: 1st. The germination and growth of plants from the seed; 2d. The propagation of plants; 3d. The increase of plants, or the enlargement of their volume.

1. THE GERMINATION AND GROWTH OF PLANTS FROM THE SEED.

If a seed be immersed in warm water for a considerable time, and then subjected to a high magnifying power, the elementary form of the future plant may be seen. In some seeds even the embryo of the future flower becomes manifest. Therefore it may not be absurd to say, that the germination and growth is effected by the developement of the embryo plant contained in the seed. And that this developement goes on by means of successive supplies of nutriment, which is taken into an organized structure adapted to its reception.

But where shall we stop in our views of these elementary forms? Shall we say, that within the embryo of the future flower which sometimes becomes manifest under the microscope, there is probably another seed containing the elementary form of the next generation, and so on *ad infinitum?*

Fortunately the present state of the science presents the means of fixing the limit in the most satisfactory manner. For nothing in the physiology of organized beings is better established, than that a perfect future seed cannot be produced without the application of pollen from a stamen, to the pistil of a stigma. But if the future seed were perfect in the present one, such an operation would not be necessary. Therefore by the aid of the microscope and this established law, we are enabled to infer, that a seed may contain the elements of a future plant as far as the flower and empty tegument of the future seed, and no farther.

2. THE PROPAGATION OF PLANTS.

There are two methods of propagating plants. First, by *reproduction;* second, by *continuation.*

1. A plant is *reproduced,* when it grows immediately from the seed. The potatoe is reproduced, when the

seeds are taken from the berry, planted and grow. Apple trees are reproduced in the nurseries from seeds, &c.

2. A plant is *continued*, when parts taken from its roots, stem, branches, its buds, &c. are transferred to different places, and so cultivated as to continue to grow in several places at the same time. The living branches or twigs of the same apple tree may continue to grow from the original root and from hundreds of other roots in different countries at the same time. And it is a fact now well established, that those twigs or grafts, however recently inserted, feel the effects of age in the same degree with the twigs remaining on the original tree*; all other circumstances being similar.

The roots of potatoes continue in succession in their native torrid regions year after year for a limited period, like the Malaxis and some others of the Orchis family in our latitude. Agriculturalists and gardeners aid their progress here, by housing the roots in winter and setting them in the earth again in the spring season. These too are greatly distributed; so that this plant is vastly extended by the continuation of the same individual. But in due time the effects of age become manifest to the cultivator, and he finds it necessary to reproduce this useful plant from the seed.

The Lombardy poplar is becoming enfeebled with age in our country, so that very recent shoots will hardly withstand a severe winter. The reason is manifest. There has never been a pistillate tree introduced from Europe; consequently this tree has never been reproduced here from the seed. We therefore see but the feeble limbs of an exile in dotage, though yet sustained in a thousand localities.

3. THE INCREASE OF PLANTS, OR THE ENLARGEMENT OF THEIR VOLUME.

After the first season of growing, all woody plants continue to increase their size, if no accident occurs, until age terminates their vital energies. Their volume is not enlarged from an extention of each fibre or pore; but from the annual acquisition of new ones. These new ones are always deposited between the bark and wood.

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* See Smith's Elements of Botany.

In the spring season a mucilage is formed between the bark and wood, called the camb, or *cambim*. Towards the decline of the year it becomes considerably indurated, and separates itself into two concentric hollow cylinders of very different thicknesses. The thinner one is attached to the bark and forms its inner membrane. The thick one is attached to the wood, and becomes the outer layer of the wood for the next year.

It is on this account that those trees, which long retain their expanding cuticles, present to our land surveyors those paradoxical magic-like marks. A beach tree, for example, if lettered or figured with a board-marker, will present these marks twenty or thirty years afterwards both on the cuticle and on the wood of the year when marked; while the intervening layers are sound and without a scar. These interposed woody layers, originating in mucilage annually deposited between the bark and wood, gradually separate the marked bark and cuticle from the marked wood; while they grow between these marks and become continuous.

PLAN OF A COURSE IN BOTANY.*

Given at 18 *Lectures and* 18 *Examination Meetings; to be completed in four or five weeks.*

Addressed to Teachers.

Always lecture just one hour, with specimens before you to illustrate all you say. If you fail of procuring specimens for the proposed lecture, substitute some other subject. Never lecture without appropriate specimens.

Divide your examination meetings into three parts. 1st. Half an hour for questions. 2d. Half an hour for analyzing plants. 3d. Half an hour for labelling from your dictum.

Let the subject of each lecture and examination meeting be nearly as follows. (Introductory lecture not included.)

1st. Lecture. The first 13 classes with their orders.

1st. Examination meeting. Questions, in the first 13 classes and orders. Analyze a plant or two in the same classes. Instruct your class in the form of labelling and of preserving plants.

2d. L. The last 9 classes, and their orders.

2d. E. Question on the last 9 classes. Analyze as before. Label all the plants collected.

Hereafter always question upon the subject of the last Lecture; analyze in all the classes as you happen to obtain plants; and label the plants collected.

3d. L. The 7 elementary organs, and the subdivisions of Stamen and Pistil.

4th. L. Subdivisions of Calyx and Corol.

5th. L. Subdivisions of the Pericarp.

6th. L. Review all the classes.

7th. L. Review the orders of all the classes.

8th. L. Inflorescence.

9th. L. Roots and Stems.

10th. L. Leaves and appendages.

11th. L. Review all the classes and their orders.

12th. L. Illustrate the analysis of grasses, and of umbelliferous plants.

13th. L. Illustrate the analysis of plants in the 14th and 15th classes.

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* This ought to have followed page 8.

14th. L. Illustrate the analysis of plants in the 16th and 17th classes.

15th. L. Illustrate the analysis of plants in the 18th and 19th classes.

16th. L. Illustrate the analysis of plants in the 20th and 21st classes.

17th. L. Illustrate the analysis of plants in the 1st, 2d, 3d, and 4th orders of the 22d class.

18th. L. Illustrate the analysis of the plants of the 5th and 6th orders of the 32d class.

These 18 lectures will be sufficient, if you question your pupils thoroughly at the Examination meetings, and cause them to collect and analyze a great number of plants.

It is best at first to give them the names of plants, and direct them to read the descriptions, and then point out to you the part to which each term in the description applies. In a few days this practice will familiarize them with the method of applying the language of description.

It is found very useful to give about one public evening lecture on the physiology of plants each week, gratuitously; at which your pupils are to invite all their friends. It is found to excite an interest very favorable to science.

Of Collecting and Preserving Plants.

You should persuade as many of your pupils to collect wild plants as possible. For there is no method of fixing the name, habit and habitat of a plant in the memory equal to seeing it in its growing state and analyzing it where we collect it. You can generally persuade ladies to go out by turn in small parties and collect plants in the nearest open fields. And young gentlemen will search the woods, swamps, and the more distant and less accessable places. There should always be an arrangement respecting the days in which each little party will go out, and each party should take pretty large baskets, so as to collect specimens for the whole class. By this method there will never be a want of specimens. You must go whenever you can spare time, and teach those who accompany you how to examine minutely and collect with care. But you will be obliged to spend a large portion of your time in collecting specimens for illustrating your lectures. You should always preserve green, in flower-pots, whatever you find that may be wanted in a future lecture, as well as for the present one.

Do not recommend large specimens to be preserved. Large specimens are useful to authors and to the learned societies. But a private collection is much more convenient, if made up of small specimens. I would never take from a large plant any thing more than is necessary to present something of its habit and its essential generic and specific characters.

There are many methods prescribed for preserving plants. The method given in the Botanical Dictionary is a very good one, if you wish to collect in a large way and to preserve several dozen specimens of each species. But I would adopt the following simple method with a class, where each individual preserves but a single set of specimens.

Let each student prepare a drying book in the most cheap and convenient manner. An old account book, a neglected or useless printed book if large, a book made of newspapers sewed together in a quarto form, or of common wrapping paper, &c. will subserve this purpose. See that the specimens are correctly labelled and put in neatly between the leaves of the drying book, and pressed with a weight of about 20 pounds. Let it be well understood that they are to be dried by absorption with the paper. For any other method of drying plants will destroy their colour and make them brittle. Plants must not be wet when collected; but may be kept from withering by being covered with a wet cloth.

Plants must never be in press more than two days, nor more than one in damp weather, without drying the book. This may be done by taking out the plants carefully and spreading them on a table while the book is drying. Though it is a little better to have two books, and pass them from the dampened book to a dry one, then back again to the former at the next change when it is dried. A book is soon dried by holding it horizontally with the back down near a hot fire, and letting the leaves fall down singly on the side next to the fire. But the plants must never be left out of the book over a few minutes.

After the plants are sufficiently dried, they will no longer excite that sensation of coolness and moisture to the touch, which is peculiar to green vegetables. Then they may be put in press into any book which is wide enough to exclude the air and light. Now they may be close side by side on each leaf, and need not be separated by more than one thickness of paper. But still they should be frequently examined, lest unexpected moisture should injure them.

About the last of November, when the botanizing season is fully past, each student should assort the whole collection into parcels according to the classes and orders marked on the labels. In this method, beginning with the first class, they should be placed in a book as before. Then a neat quarto volume of pretty stiff paper should be made, with slips of paper making the back about three times as thick as the front. In this book the plants should be fastened with carpenter's glue or common paste, on the left side only of each leaf; the labels still remaining to denote the names, &c. as well as to assist in holding on the specimens.

After the plants are fastened and well dried, dissolve half an ounce of corrosive sublimate in half a pint of alcohol (both may be had for a trifle at any druggist shop) and slightly brush over each plant with it. This will forever defend them from insects and improve the colours of all the green parts.

As your course will embrace but about one fourth or one fifth of the season, you ought to visit your class or classes in November or December, and assist them in labelling plants which they have preserved in your absence and could not label accurately.

For the Labelling Catalogue.

E. stands for exotics—r. red flower—p. purple—y. yellow—w. white—b. blue—g. green—Ap. that the plant flowers first in April—M. May—J. June—Ju. July—Au. August—S. September—Oc. October—☉ annual—♂ biennial—♃ perennial—♄ woody stem.

The generic names are printed in capitals: the specific names in italics; the English name, when the plant has any, is parenthesised in Roman. When species are described, the descriptions are in Roman. If an English name is added to one species only, the same name may be given to the other species of that genus, qualified by some appropriate epithet. As the general name for carex is sedge, I would call the carex plantaginea the broad-leaf sedge, &c.

The first number preceding the generic names stands for the number of the class, the second for the number of the order. The first number following the generic names refers to the natural order of Linneus, the last number refers to the natural order of Jussieu. As Aster is in the eighteenth class and second order in the artificial system; the forty-ninth natural order of Linneus and of course possesses *tonic* and *secernant stimulant* properties; and in the fifty-fifth natural order of Jussieu.

For the Genera.

When the asterisk (*) is prefixed to one or more generic names, set down below the end of an order, it implies that these genera are not described here, but stray as it were into this class and order by departing from the artificial character. Therefore when a plant thus runs astray, so as to lead us to a wrong place in pursuit of its name, and of course when we cannot find an appropriate generic description for it, we go back to where each of these asterisked or advertized genera respectively belong, and read over their general generic characters until we find the right name.

EXERCISES
IN THE
GENERA OF PLANTS.

CLASS I. MONANDRIA.

ORDER I. MONOGYNIA.

Salicornia. Calyx inflated, entire: corol o: seed 1, inclosed in the calyx.

ORDER II. DIGYNIA.

Callitriche. Calyx inferior, 2-leaved: capsule membranaceous and margined: (flowers sometimes monoecious, and by some the calyx is called the corol.)

Blitum. Calyx 3-cleft, berry-like: corol o: seed 1.

CLASS II. DIANDRIA.

ORDER I. MONOGYNIA.

A. *Corol inferior, 1-petalled, regular: border 4-parted.*

Ligustrum. Calyx 4-toothed: corol with ovate divisions: berry 4-seeded.

Syringa. Corol salver-form: capsule 2-celled.

B. *Corol inferior, 1-petalled, irregular: seeds in capsules.*

Catalpa. Corol 5-cleft: calyx 2-leaved: capsule 2-celled.

Gratiola. Calyx 5-leaved or 5-parted, sometimes with a 2-leaved calycle: corol 4-cleft, 2-lipped, reversed: stamens sometimes 4; (2 of them barren) stigma 2-lipped: capsule 2-celled.

Veronica. Calyx 4-parted: corol 4-cleft, lower division smaller: capsule 2-celled, obcordate.

Callistachia. Calyx 5-parted: corol tubular, 4-cleft, with one division smaller: capsule ovate, 2-celled.

C. *Corol inferior, 1-petalled, irregular: seeds naked.*

Lycopus. Calyx tubular, half 5-cleft: corol tubular, 4-cleft, nearly equal, 1 division emarginate: stamens distant: seeds four, retuse.

Monarda. Calyx cylindric, striated, 5-toothed : corol ringent, upper lip somewhat linear, involving the filaments.

Salvia. Calyx tubular, 2-lipped, under lip 2-toothed : corol ringent : filaments affixed to pedicels by their sides.

Collinsonia. Calyx tubular, 2-lipped : corol unequal, under lip many-cleft, capillary : one perfect seed.

D. *Corol superior.*

Circaea. Calyx 2-leaved : corol 2-petalled : capsule hispid, 2-celled, not gaping ; cells 1-seeded.

ORDER II. DIGYNIA.

Anthoxanthum. Calyx, glume 2-valved, 1-flowered : corol, glume 2-valved, acuminate, awned : seed 1.

CLASS III. TRIANDRIA.

ORDER I. MONOGYNIA.

A. *Corol superior.*

Crocus. Spathe radical : corol funnel-form, with a long slender tube : stigma deep-gashed, crested.

Iris. Calyx, spathe 2-valved : corol 6-parted, divisions alternately reflected : stigmas petal-like.

B. *Corol inferior.*

Xyris. Calyx, glume 2-valved, in a head : corol 3-petalled, equal, crenate : capsule 3-valved, many seeded.

C. *Plants grassy : valves of the calyx glume-like.*

Cyperus. Glumes chaffy, scales imbricated 2-ways : seed single, beardless : spikelets compressed.

Scirpus. Glumes chaffy, scales imbricated every way : seed single, naked, surrounded with hairs or bristles.

Trichophorum. Calyx, scales imbricated every way : seed beset with capillary bristles, which at length project out, always 6 in number : spikelets ovatish.

ORDER II. DIGYNIA.

The proper Grasses.

A. *Glume 1-flowered ; spiked.*

Oryzopsis. Calyx 2-valved, lax, obovate : corol teretish-ovate, leathery : valves 2, outer one awned at the apex : appendages 2, linear, chaffy.

Hordeum. Calyx lateral, 2-valved, 1 or 2-flowered; florets in threes, the middle one sessile, lateral ones often barren: corol 2-valved, acute, outer valve awned.

Phleum. Calyx hard, 2-valved, sessile, linear, truncate, bicuspidate: corol inclosed.

B. *Glumes 2-flowered or more; spiked.*

Secale. Calyx 2-valved, 2 or many flowered, opposite, solitary: glumes linear-lanceolate, smooth or channelled both sides.

Triticum. Calyx 2-valved, about 3-flowered, alternate; florets obtusish and pointed: glumes beardless or interruptedly bearded: spikelets shortish.

C. *Glumes 2-flowered or more; in panicles.*

Briza. Calyx 2-valved, many flowered: spikelets of the panicle 2-ranked: valvelets inflated, heart-form, obtuse; inner one minute.

Dactylis. Calyx 2-valved, one valve smaller: corol 2-valved: awnless, compressed, carinate: style long: panicles strait: spikelets imbricate with lateral florets.

Poa. Calyx 2-valved, many flowered: corol ovate; valves 2-coloured, acutish, scarious at their margins: spikelets of the panicle ovate, awnless.

Bromus. Calyx 2-valved; spikelets oblong, terete-2-ranked; valves awned below the tip.

Avena. Calyx 2-valved, many flowered; valves with a twisted awn on the back: glumes membranaceous and somewhat follicle-like.

* Alsine.

ORDER III. TRIGYNIA.

Mollugo. Calyx 5-leaved, inferior: corol 0: capsule 3-celled, 3-valved, many seeded.

Proserpinaca. Calyx 3-parted, superior: nut 3-sided, 3-celled, crowned by the calyx.

* Alsine.

CLASS IV. TETRANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers 1-petalled, inferior, calyx 4-cleft.*

Plantago Corol 4-cleft reflexed: capsule 2-celled, opening transversely: stamens very long.

Houstonia. Corol salver-form : capsule 2-celled, 2-valved, 2-seeded.

B. *Flowers* 1-*petalled, superior.*

Mitchella. Calyx 4-toothed : corols 2 on each germ, tubular : berry double, 4-seeded : stigmas 4.

Cephalanthus. Inflorescence in a head : general calyx none : proper calyx superior : corol funnel-form : receptacle globular, hairy : seed solitary, oblong.

Galium. Calyx 4-toothed : corol flat ; seeds 2, roundish.

C. *Flowers* 4-*petalled, superior.*

Cornus. Calyx 4-toothed : drupe with a 2-celled nut. Some species have a 4-leaved involucre.

Ludwigia. Calyx 4-parted, the divisions long, permanent : capsule 4-cornered, 4-celled, perforated at the top, many seeded—(petal sometimes wanting.)

* Convallaria, Cardamine.

ORDER II. DIGYNIA.

Hamamelis. Involucre 3-leaved : perianth 4-leaved : petals 4, very long, linear : nut 2-celled, 4-horned.

* Cuscuta, Gentiana.

ORDER IV. TETRAGYNIA.

Potamogeton. Calyx o : petals 4 : style o : seeds 4.

CLASS V. PENTANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers* 1-*petalled, inferior ; having* 4 *naked seeds.* Rough-leaved plants.

Lithospermum. Calyx 5-parted : corol funnel-form, with an open throat : seeds ovate, pointed, stoney : stamens and pistils inclosed.

Cynoglossum. Calyx 5-parted : corol funnel-form, vaulted, throat closed : seeds depressed, affixed to the side of the style.

Myosotis. Calyx half-5-cleft : corol salver-form, curved, 5-cleft, vaulted, throat closed, the lobes slightly emarginate : seeds smooth or prickly.

Borago. Corol wheel-form, the throat closed with rays surrounding the stamens.

B. *Flowers* 1-*petalled, inferior ; seeds covered with a* 1-*celled capsule.*

Hydrophyllum. Corol bell-form, 5-cleft, with 5 longitudinal honey-bearing groves inside : capsule globose, 2-valved : stigma 2-cleft.

Lysimachia. Corol wheel-form : capsule globular, 10-valved, mucronate : stigma obtuse.—(In some species the filaments are united at the base.)

Primula. Umbellets involucred : tube of corol cylindric, throat open, divisions of corol emarginate : capsule 1-celled with a 10-cleft mouth : stigma globular.

C. *Flowers* 1-*petalled, inferior, capsules* 2-*celled.*

Convolvulus. Corol funnel-form, plaited : stigma 2-cleft or double : cells of the capsule 2 or 3 ; each 2-seeded.

Datura. Calyx tubular, angled, caducous : corol funnel-form, plaited ; capsule 4-valved, sometimes 4-celled, smooth or thorny.

Verbascum. Corol wheel-form, somewhat irregular : stamens declined, hairy : capsules 2-celled, 2-valved ; valves inflexed : many-seeded.

D. *Flowers* 1-*petalled, inferior ; capsules* 3-*celled.*

Phlox. Calyx prismatic : corol salver-form ; with a tube somewhat curved : filaments unequal in length : stigmas 3-cleft : capsule 3-celled, 1-seeded.

Ipomoea. Corol funnel or bell-form, with 5 plaits : stigma globe-headed, papillose : capsule 2 or 3-celled, many-seeded.

E. *Flowers* 1-*petalled, inferior ; capsules* 5-*celled.*

Azalea. Corol tubular, half-5-cleft, somewhat oblique : stamens on the receptacle ; stigma obtuse, usually ending with 5 short papillae.

Vinca. Corol salver-form, twisted, border 5-cleft, with oblique divisions ; throat 5-angled : seed naked, oblong : follicles 2, erect, terete, narrow.

F. *Flowers* 1-*petalled, inferior ; having berries* 2-*celled.*

Solanum. Calyx permanent : corol bell or wheel-form, 5-lobed, plaited : anthers thickened, with two pores at the top : berry containing many seeds.

Capsicum. Corol wheel-form : berry juiceless : anthers converging : calyx angular.

G. *Flowers 1-petalled superior : calyx 5-cleft.—(Stems woody.)*

Lonicera. Corol tubular, 5-cleft, unequal : berry 2 or 4-celled : seeds many.

Xylosteum. Corol tubular, border 5-parted, nearly equal : berries in pairs, whose bases are attached together or which are united in one.

Diervilla. Calyx oblong : corol twice as long as calyx, funnel-form, border 5-cleft, spreading : capsule oblong, 4-celled, many-seeded.

(Stems not woody.)

Campanula. Corol bell-form, closed at the bottom by valves bearing the stamens : stigma 3 to 5-cleft : capsule 3 to 5-celled, opening by lateral pores.

Lobelia. Corol irregular, often irregularly slitted : anthers cohering and somewhat curved : stigma simple : capsule 2 or 3-celled.

Mirabilis. Corol funnel-form, contracted below : calyx inferior : germ between the calyx and corol : stigma globular.

H. *Flowers 5-petalled, inferior.*

(Stems woody.)

Ceanothus. Petals vaulted, standing in the cup-form calyx ; berry or capsule dry, 3-grained.

Celastrus. Calyx flat : corol spreading : capsule 3-angled, 3-celled, berry-like : stigma 3-cleft : seeds calyptred.

Vitis. Calyx 5-toothed : petals cohering at the tip hood-like, withering : berry 5-seeded, globular. (Often dioecious.)

Ampelopsis. Calyx 5-toothed : petals reflexed, spreading : berry 5-seeded, globular.

(Stems not woody.)

Impatiens. Calyx 2-leaved : corol irregular, spurred : anthers cohering : capsule elastic, 5-valved.

Viola. Calyx 5-leaved : corol irregular, with a horn behind (sometime the horn is wanting :) anthers attached by a membranous tip : capsule 1-celled, 3-valved.

Claytonia. Calyx 2-valved : stigma 3-cleft : capsule 1-celled, 3-valved, 3-seeded.

I. *Flowers 5-petalled, superior.*

Ribes. Corol and stamens inserted on the calyx: style 2-cleft: berry many seeded.

* Sedum.

ORDER II. DIGYNIA.

A. *Follicles 2: corol 1-petalled, with a five-parted border.*

Apocynum. Corol bell-form: stamens with converging anthers adhering to the stigma, alternating with 5 nectaries: stigma thick: follicles long-linear.

B. *Capsules 1 or 2-celled, 2-valved: corol 1-petalled: calyx 5-cleft.*

Gentiana. Corol with a tubular base, without pores: capsule 1-celled, oblong: columellas 2, longitudinal.

Cuscuta. Corol 5-cleft: capsule 2-celled, dividing transversely at the base: seeds growing together in pairs.

C. *Corol* 0.

Chenopodium. Calyx 5-leaved, 5-angled, inferior: seed 1, lens-like, invested by the calyx.

Ulmus. Calyx bell-form withering, border 5-cleft: seed 1, enclosed in a flat membranaceous samara. (Stamens vary from 4 to 8.)

D. *Plants* UMBELLIFEROUS. *Flowers 5-petalled, 2-seeded.*

(With general and partial involucres.)

Coriandrum. Corols radiate, with petals inflected, emarginate: general involucre 1-leafed; partial one halved: fruit globular.

Sanicula. Flowers of the disk abortive: umbels crowded into head-like heaps: seeds prickly.

Daucus. Involucres pinnatifid: flowers somewhat radiate, those of the disk abortive: fruit hispid with hairs.

Ligusticum. Involucre membranaceous: calyx 5-toothed: petals equal, involute, entire: fruit 3 or 5-ribbed each side, oblong.

(With a partial, and without a general, involucre.)

Myrrhis. Umbel compound: involucres erect: fruit sub-linear, angled, tailed; angles a little furrowed and hispid; the joining sides of seeds furrowed: style subulate.

(Without a partial involucre, and rarely having a general one.)

Anethum. Fruit ovatish, compressed striate: petals involute, entire.

Apium. Fruit ovate, striate : involucre 1-leafed : petals equal.

* Polygonum.

ORDER III. TRIGYNIA.

A. *Corols superior, 5-cleft.*

Viburnum. Calyx 5-parted : berry or drupe 1-seeded.

Sambucus. Calyx 5-parted : berry 3-seeded.

B. *Corols inferior, 5-petalled.*

Staphylea. Calyx 5-parted : capsules inflated, connate ; nuts globular, having a cicatrice.

Rhus. Calyx 5-parted ; berry 1-seeded.

Alsine. Calyx 5-leaved : petals equal : capsule 1-celled, 3-valved, many seeded ; having a free central columella.

* Euphorbia.

ORDER IV. TETRAGYNIA.

Parnassia. Calyx 5-parted : corol 5-petalled : nectaries 5, with stamen-like divisions, globular tips : capsule 4-valved, 2-celled : seed membranaceous-margined.

ORDER V. PENTAGYNIA.

Aralia. Umbellets involucred : perianth 5-toothed, superior : petals 5 : berry crowned, 5-celled ; cells 1-seeded.

Linum. Calyx 5-leaved : corol 5-petalled : capsule 5-valved, 10-celled : seeds solitary : filaments thickening at the base.

* Cerastium.

CLASS VI. HEXANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers with a perianth and corol, without a spathe.*

Tradescantia. Calyx inferior, 3-leaved : corol 3-petalled : filaments with jointed hairs : capsules 3-celled.

Berberris. Calyx inferior, 6-leaved : petals 6, with 2 glands at the claw of each : style o : berry 1-celled, 2-seeded. (Stigma navelled ; stamens spring up on being irritated.)

B. *Flowers with a spathe or glume without a perianth.*

Hypoxis. Glume-like spathe 2-valved : corol superior, 6-parted, permanent : capsule elongated, narrow at the base : seed roundish.

Allium. Spathe many flowered : petals inferior, ovate, spreading, sessile. (Flowers in close umbels or heads.)

Narcissus. Petals 6, equal, superior : nectary bell-form, 1-leafed, including the stamens.

Pontederia. Corol inferior, 6-cleft, 2-lipped : capsule fleshy, 3-celled, many-seeded : 3-stamens commonly inserted on the tip, and three on the tube of the corol.

C. *Flowers without a calyx.*

Hemerocallis. Corol 6-parted, tubular-funnel-form : stamens declined : stigma small, simple.

Erythronium. Corol liliaceous, inferior, 6-petalled ; petals reflexed, having 2 tubercle-form nectaries at the base of the three inner alternate petals.

Asparagus. Corol inferior, deeply 6-parted, erect ; the three inner divisions reflexed at the apex : berry 3-celled ; many-seeded.

Hyacinthus. Corol roundish or bell-form, equal, 6-cleft : nectariferous pores at the top of the germ : stamens inserted in the middle of the corol : cells somewhat 2-seeded.

Lilium. Corol inferior liliaceous 6-petalled ; petals with a longitudinal line from the middle to the base : stigma 3-lobed ; capsule, with the valves connected by hairs crossing as in a sieve.

Tulipa. Corol 6-petalled, liliaceous : style none.

Fritillaria. Corol 6-petalled, bell-form, with a nectariferous cavity above the claw of each : stamens of the length of the corol : seeds flat.

Convallaria. Corol inferior, 6-cleft : berry 3-celled, spotted before ripening.

Uvularia. Corol inferior, 6-petalled, with a nectariferous hollow at the base of each petal : filaments very short.

* Trientalis, Polygonum, Laurus, Corydalis.

ORDER II. DIGYNIA.

Oryza. Calyx, glume 2-valved, 1-flowered : corol 2-valved, adhering to the seed.

* Ulmus.

ORDER III. TRIGYNIA.

Medeola. Calyx 0 : corol deeply 6-parted, revolute : berry 3-seeded.

Veratrum. Polygamous. Calyx 0 : corol 6-petalled, without glands : capsules 3, many-seeded.

Trillium. Calyx 3-leaved, inferior, spreading : corol 3-petalled : berry 3-celled, many-seeded.

Rumex. Calyx 3-leaved : petals 3, converging ; stigma many-cleft : seed 1, naked, three-sided.

ORDER XIII. POLYGYNIA.

Alisma. Calyx 3-leaved : petals 3 : capsules numerous, 1-seeded.

CLASS VII. HEPTANDRIA.

ORDER I. MONOGYNIA.

Trientalis. Calyx 7-leaved : corol 7-parted, equal, flat : berry juiceless : number of stamens variable.

Æsculus. Calyx inflated, 4 or 5-toothed : corol 4 or 5-petalled, inserted on the calyx, unequal, pubescent : capsule 3-celled : seeds large, chesnut-form.

* Polygonum orientale.

CLASS VIII. OCTANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers superior.*

Oxycoccus. Calyx superior 4-cleft : corol 4-parted, the divisions nearly linear, revolute : filaments converging, anthers tubular, 2-parted : berry many-seeded.

Epilobium. Calyx 4-cleft : corol 4-petalled : capsule oblong and of great length : seeds feathered.

Oenothera. Calyx 4-cleft, tubular : caducous, divisions deflected : petals 4, inserted on the calyx : stigma 4-cleft ; capsule 4-celled, 4-valved : seeds not feathered.

B. *Flowers inferior.*

Rhexia. Calyx pitcher-form, 4 or 5-cleft ; petals 4, oblique, inserted on the calyx : anthers declined : capsule 4-celled, within the calyx, setose : seeds numerous, cochleate.

Acer. Polygamous. Calyx 5-cleft : corol 4 or 5-petalled or wanting : samaras 2, united at the base, 1-seeded.

Tropoeolum. Calyx 4 or 5-cleft, coloured, spurred; petals 4 or 5, unequal: nuts leathery, sulcate.

ORDER II. DYGINIA.

Chrysosplenium. Calyx 4 or 5-cleft. coloured: corol o: capsule 2-beaked, 1 celled, many-seeded.

ORDER III. TRIGYNIA.

Polygonum. Calyx inferior, 5-parted, coloured, corol o: seed 1, angular, covered with the calyx.—(Stamens and pistils vary in number—The calyx in some species might be taken for a corol.)

CLASS IX. ENNEANDRIA.

ORDER I. MONOGYNIA.

Laurus. Calyx 4 to 6-parted: corol o: nectaries 3, two-bristled glands, surrounding the germ: drupe 1-seeded. (Stamens vary from 3 to 14—often diœcious—The calyx may be taken for a corol.)

ORDER III. TRIGYNIA.

Rheum. Calyx none: corol 6-cleft, permanent: seed 1, 3-sided.

CLASS X. DECANDRIA.

ORDER I. MONOGYNIA.

A. *Flowers many-petalled, irregular.*

Podalyria. Calyx 5-cleft, somewhat 2-lipped: corol papilionaceous, wings of the length of the banner: legume inflated, smooth, many-seeded.

Cassia. Calyx 5-leaved: corol 5-petalled: anthers, 3 lower ones beaked: legume membranaceous.

B. *Flowers 5-petalled, regular.*

Pyrola. Calyx 5-parted: anthers with 2 pores: capsule 5-celled, dehiscent at the angles.

Chimaphila. Calyx 5-parted: petals 5: stigma sessile, thick, orbiculate; germ immersed: anthers beaked, opening with a kind of 2-valved aperture: capsules 5-celled, dehiscent at the angles.

C. *Flowers 1-petalled.*

Andromeda. Calyx 5-parted, inferior: corol ovate or roundish, with a 5-cleft reflexed mouth: capsule 5-celled with partitions contrary. (Stamens sometimes 8.)

Kalmia. Calyx 5-parted: corol wheel-salverform, with 10 horns beneath and 10 cavities within: capsule 5-celled.

Vaccinium. Calyx 5-toothed or 5-parted: corol bell or pitcher-form, 5-cleft, the divisions reflected: filaments inserted on the germ with the corol: berry 4 or 5-celled, many seeded.

Epigaea. Calyx double, outer 3-leaved, inner 5-parted: corol salver-form; capsule 5-celled, many-seeded.

Gaultheria. Calyx inferior, double, outer 2-leaved, inner 5-cleft: corol ovate; capsule 5-celled, invested with the inner, berried, calyx: nectary surrounding the germ 10-pointed.

D. *Calyx none.*

Monotropa. Corol 10-petalled; 5-outer with nectariferous hollows at the base: capsules 5-valved. (A half of the carpogenation sometimes wanting.)

* Geranium, Rhexia, Portulacca, Lythrum.

ORDER II. DIGYNIA.

Saxifraga. Calyx 5-parted: corol 5-petalled: capsule 1-celled, 2-beaked; many seeded.

Tiarella. Calyx 5-parted: corol inserted on the calyx; 5-petalled, petals entire: capsule 1-celled, 2-valved, 1 valve larger.

Mitella. Calyx 5-cleft: petals 5 on the calyx, pinnatifid: capsule 1-celled, 2-valved, valves equal.

Dianthus. Calyx inferior, cylindrical, 1-leafed, with 4 to 8 scales at the base: petals 5 with claws: capsules cylindrical, 1-celled, dehiscent at the top.

Saponaria. Calyx inferior; 1-leafed, tubular, without scales: petals 5, with claws: capsule oblong, 1-celled.

* Chrysosplenium.

ORDER III. TRIGYNIA.

Silene. Calyx 1-leafed, inferior, conic: petals 5, with claws appendaged at the mouth: capsule imperfectly 3-celled.

ORDER V. PENTAGYNIA.

Sedum. Calyx inferior 5-cleft: petals 5: 5 nectariferous scales at the base of the germ: capsules 5.

Penthorum. Calyx 5-10-cleft: petals 5 or 0: capsule 5-cuspidate, 5-celled.

Oxalis. Calyx 5-leaved inferior : petals 5, cohering by the claws : capsule 5-celled, 5-cornered, dehiscent at the corners : stamens with 5 shorter outer ones adhering at their bases.

Agrostemma. Calyx 1-leaved coriaceous : petals 5 with claws, border obtuse, entire : capsule 1-celled, many-seeded.

Cerastium. Calyx 5-leaved : petals 5, 2-cleft : capsule 1-celled, dehiscent at top, tooth-like.

Lychnis. Calyx 1-leaved, oblong, petals 5, with claws : the limb somewhat 2-cleft : capsule 1 or 5-celled.

* Phytolacca.

ORDER X. DECAGYNIA.

Phytolacca. Calyx 0 : corol 5-petalled, calyx-like, inferior : berry 10-celled, 10-seeded.

CLASS XI. DODECANDRIA.

ORDER I. MONOGYNIA.

Asarum, Calyx 3 or 4-cleft, superior : corol 0 : stigma 6-cleft : capsule coriaceous, crowned with the calyx.

Portulacca. Calyx 2-cleft, inferior : corol 5-petalled : capsule 1-celled, opening transversely : columella 5, filiform.

Lythrum. Calyx 6, 8, 10 or 12-toothed, inferior : petals 5 or 6 on the calyx : capsule 2-celled, many-seeded, covered.

ORDER II. DIGYNIA.

Agrimonia. Calyx 5-toothed, invested with an outer one : petals 5 : seeds 2, in the bottom of the calyx.

* Delphinium.

ORDER III. TRIGYNIA.

Euphorbia. Calyx 1-leaved, inflated : petals 4 or 5, standing on the calyx : capsule 3-grained. Flowers not umbelled.

ORDER XIII. POLYGYNIA.

Sempervium. Calyx 9 to 12-parted : petals 8 to 12 : capsules 12, many seeded. (Stamens 16 or 20.)

CLASS XII. ICOSANDRIA.

ORDER I. MONOGYNIA.

Philadelphus. Calyx 4 or 5-parted, superior : corol 5-

petalled : style 4-cleft : capsule 4 or 5-celled, many seeded ; seed arilled.

Prunus. Calyx 5-cleft, inferior : corol 5-petalled : nut of the drupe smooth with prominent seams at the sutures.

Amygdalus. Calyx 5-cleft, inferior : petals 5 : drupe with a nut perforated with pores : flowers sessile.

* Lythrum.

FROM ORDER II. DIGYNIA, TO ORDER V. PENTAGYNIA.

Crataegus. Calyx superior, 5-cleft : petals 5 : styles generally 3 or 5 : berry mealy : seeds 2 to 5, bony.

Aronia. Calyx 5-toothed : petals 5 : fruit pomaceous : berry 5 or 10-celled ; cells 1 or 2-seeded ; seeds cartilaginous.

Pyrus. Calyx 5-cleft, superior : corol 5-petalled : pome 5-celled, many seeded : seeds ovate, thick, not membranaceous or cartilagenous.

Spiraea. Calyx 5-cleft, inferior, spreading : corol 5-petalled : capsule 2-valved within, many-seeded.

ORDER XIII. POLYGYNIA.

Rosa. Calyx urn-form, 5-cleft, fleshy, contracted towards the top : petals 5 : seeds numerous, bristly, fixed to the sides of the calyx within.

Rubus. Calyx 5-cleft, corol 5-petalled : pistils numerous : berry composed of many juicy, 1-seeded acines.

Fragaria. Calyx 10-cleft, 5 alternate divisions smaller : corol 5-petalled ; receptacle ovate, berry-like, caducous.

Comarum. Calyx 10-cleft, 5-alternate divisions smaller : petals 5, smaller than the calyx : receptacle ovate, spongy, permanent, villous.

CLASS XIII. POLYANDRIA.

ORDER I. MONOGYNIA.

Cimicifuga. Calyx about 4-leaved, becoming colored before expanding, caducous : corol o : stigma sessile, converging towards the gibbous side of the germ : capsule 2-valved.

Cistus. Calyx 5-leaved, 2 of them smaller : corol 5-petalled : capsule 3-valved, opening at the top.

Sarracenia. Calyx double, 3 and 5-leaved: corol 5-petalled; stigma peltate, covering the stamens: capsule 5-celled.

Tilia. Calyx 5-parted: corol 5-petalled: capsule 5-celled, globular, coriaceous, dehiscent at the base, 1-seeded.

Sanguinaria. Calyx caducous, 2-leaved: corol about 8-petalled: capsule pod-like, ovate, 1-celled.

Podophyllum. Calyx 3-leaved: corol about 9-petalled: berry 1-celled, crowned with the stigma.

Nymphaea. Calyx 4 to 7-leaved, equalling the petals: corol many-petalled: stigma marked with radiated lines: berry many-celled, many-seeded.

Nuphar. Calyx 5 or 6-leaved, petals numerous, much smaller than the calyx, inserted on the receptacle with the stamens, nectariferous on their backs: stigma with radiate furrows, sessile: berry many-celled, many-seeded.

FROM *ORDER* II. DIGYNIA, TO *ORDER* V. PENTAGYNIA.

Hypericum. Calyx 5-parted, divisions subovate: corol 5-petalled: filaments often united at the base in 3 or 5 sets: styles 2 to 5: capsules roundish with a number of cells equal to the number of styles.

Delphinium. Calyx o: corol 5-petalled, unequal: nectary 2-cleft, horned behind: capsules 1 or 3, pod-like.

Aconitum. Calyx o: petals 5, upper one vaulted: nectaries 2, hooded, peduncled, recurved: capsules 3 or 5, pod-like.

Aquilegia. Calyx o: petals 5: nectaries 5, alternating with the petals and ending in horns beneath: capsules 5, distinct.

Nigella. Calyx none: petals 5: nectaries 5, three-cleft, within the corol: capsules 5, convex.

* Caltha, Hepatica.

ORDER XIII. POLYGAMIA.

Clematis. Calyx o: petals 3, 4, 5 or 6; seeds compressed: styles permanent, becoming long tails. (Some species are diœcious.)

Thalictrum. Calyx o: petals 4 or 5: filaments very long: seeds without tails, striate, terete. (Some species are diœcious.)

Coptis. Calyx o: petals 5 or 6, caducous: nectaries 5 or 6, cowled: capsules 5 to 8, stiped, stellate, beaked, many-seeded.

Caltha. Calyx o: petals 5 to 9: capsules numerous, many-seeded: nectaries o: (styles variable in number.)

Hepatica. Calyx 3-leaved: petals 6 to 9: seed naked.

Ranunculus. Calyx 5-leaved: petals 5, with claws and a nectariferous pore or scale on the inside of each: seeds numerous.

Adonis. Calyx 4 or 5-leaved: petals 5 or more, without nectariferous pores: seeds awnless.

CLASS XIV. DIDYNAMIA.

ORDER I. GYMNOSPERMIA.

A. *Calyx 5-parted with the divisions or teeth nearly equal.*

Lamium. Corol with the upper lip entire, vaulted; under lip 2-lobed; throat with a tooth at each margin.

Nepeta. Calyx dry, striated: corol with a longish tube, under lip with the middle division crenate, throat with a reflected margin: stamens approaching.

Mentha. Corol nearly equal, 4-cleft: broadest division emarginate: stamens erect, distant.

Leonurus. Calyx 5-angled, 5-toothed, corol with the upper lip villose, flat entire; lower lip 3-parted, middle division undivided.

Glechoma. Calyx 5-cleft: each pair of anthers approaching so as to exhibit the form of a cross.

B. *Calyx 2-lipped.*

Trichostema. Corol with the upper lip falcate: the under lip 3-parted with the middle division small, oblong: filaments very long-exsert, curved.

Scutellaria. Calyx with an entire mouth, which is closed with a lid after the corol falls out: tube of corol bent.

Origanum. Calyxes collected into a 4-sided strobile-like cone, with broad intervening bracts: corol with the upper lip erect, flat; under lip 3-parted, divisions nearly equal.

Thymus. Calyx with the throat closed with hairs: corol with the upper lip flat, emarginate; lower lip longer.

Prunella. Calyx with the upper lip dilated: filaments 2-forked with an anther on one of the points: stigma 2-cleft.

ORDER II. ANGIOSPERMIA.

A. *Calyx 4-cleft.*

Bartsia. Calyx lobed, emarginate, coloured: corol less than calyx; upper lip longest: capsule 2-celled; seed angled.

Melampyrum. Corol with the upper lip compressed, the margin folded back: capsule 2-celled, oblique, dehiscent on one side: seeds 2, gibbous.

B. *Calyx 5-cleft or 5-leaved.*

Scrophularia. Calyx 5-cleft: corol sub-globose, resupinate, middle division of lower lip reflexed: capsule 2-celled. Generally a rudiment of a fifth filament.

Antirrhinum. Calyx 5-leaved or deeply 5-parted, the two lower divisions remote: corol ringent, spurred or with a prominent base, throat closed with a prominent pallate: capsule ovate, 2-valved, dehiscent at the apex.

Gerardia. Calyx 5-cleft or 5-toothed: corol somewhat bellform, unequally 5-lobed: capsule 2-celled, dehiscent at the top.

Pedicularis. Calyx 5-cleft or obliquely truncate: corol ringent: capsule 2-celled, mucronate, oblique: seeds numerous, coated.

Mimulus. Calyx prismatic, 5-toothed: corol ringent, upper lip folded back upon its sides: stigma thick: capsule 2-celled, many-seeded.

Chelone. Calyx 5-cleft or 5-leaved: corol ringent, inflated; the upper lip emarginate, obtuse; under lip slightly 3-cleft: the rudiment of a smooth filament between the two tallest stamens: capsule 2-celled.

Pentstemon. Calyx 5-cleft or 5-leaved: corol ringent, inflated; the rudiment of a bearded filament between the two tallest stamens: capsule 2-celled.

* Linnæa, Verbena.

CLASS XV. TETRADYNAMIA.

ORDER I. SILICULOSA.

All plants of this class have flowers with 4-leaved calyxes and cruciform corols.

Cochlearia. Silicle thick, torulose, many-seeded, 2-valved; the valves gibbous obtuse.

Lepidium. Calyx spreading: corol regular: silicle emarginate, cordate, many-seeded: valves carinate, partition contrary.

Thlaspi. Calyx spreading: silicle emarginate, obcordate, many-seeded; valves resemble 2 boats with the keels outward.

* Sisymbrium.

ORDER II. SILIQUOSA.

A. *Calyx leaves converging or closed upon the corols, when the flowers are mature.*

Arabis. Glands 4, one within each leafet of the calyx, of the size of the reflected scale: silique compressed, torulose, sub-divaricate.

Turritis. Calyx converging, erect: corol erect: silique very long, angled, striate.

Hesperis. Calyx closed, shorter than the claws of the petals: petals bent obliquely, linear or obovate: silique sub-terete: stigma forked, with converging apexes.

Brassica. Calyx erect, converging: partition extending beyond the valves of the silique: seed globose: glands between the short stamens and pistil, and between the long stamens and calyx.

Raphanus. Calyx closed, setose: silique torose, somewhat jointed, terete, not opening by valves, 1 or 2-celled: glands between the short stamens and pistil, and between the long stamens and calyx.

Cheiranthus. Calyx closed, two of the leafets gibbous at the base: petals dilated: silique when young with a glandular tooth each side: stigma 2-lobed: seed flat.

B. *Calyx-leaves spread, not lying closed upon the corol when the flowers are mature.*

Cardamine. Calyx-leaves spreading but little: stigma entire: a single gland between each of the short stamens and the calyx: silique long, bursting elastically with revolute valves.

Sisymbrium. Calyx and corol spreading: silique bursting, with a short terete beak, valves straitish.

Sinapis. Calyx spreading: corol with strait claws: glands between the short stamens and pistil, and between the long stamens and calyx: partition extending beyond the valves of the silique, ensiform.

CLASS XVI. MONADELPHIA.

ORDER III. TRIANDRIA.

Sisyrinchium. Spathe 2-leaved : perianth 0 : corol superior, 6-cleft, tubular : style 1 : capsule 3-celled.

* Lysimachia, Linum, Anagallis.

ORDER X. DECANDRIA.

Geranium. Calyx 5-leaved : corol 5-petalled, regular : nectariferous glands 5, adhering to the base of the long filaments : arils 5, 1-seeded, awned, beaked at the head of the receptacle : awn naked, strait.

* Oxalis.

ORDER XIII. POLYANDRIA.

Sida. Calyx simple, angular, 5-cleft : style many-parted : capsules many, 1 or 3-seeded.

Hibiscus. Calyx double, outer one many-leaved, inner one about 5-cleft : stigmas 5 : capsule 5 or 10-celled, many-seeded.

Malva. Calyx double, outer one 3-leaved, inner one 5-cleft : capsules many, 1-seeded.

Althaea. Calyx double, outer one 6 or 9-cleft : capsules many, 1-seeded.

Lavatera. Calyx double, outer one 3-cleft : capsules many, many-seeded.

CLASS XVII. DIADELPHIA.

FROM *ORDER* V. PENTANDRIA, TO *ORDER* VIII. OCTANDRIA.

Fumaria. Calyx 2-leaved, caducous : corol irregular, spurred at the base : filaments 2, each with 3 anthers : capsule drupe-like, 1-celled, 1-seeded, not opening by valves ; seed affixed to the side of the cell.

Corydalis. Calyx 2-leaved : corol ringent, 1 or 2-spurred : filaments 2, membranaceous, each with 3-anthers : capsule silique-like, many-seeded.

Polygala. Calyx 5-leaved, unequal, 2 of the leafets wing-like, larger, coloured : corol irregular (or rather, calyx 3-leaved, corol imperfectly papilionaceous) capsule obcordate, 2-celled, 2-valved. Keel of corol sometimes appendaged.

ORDER X. DECANDRIA.

A. Stamens united in one set.

Lupinus. Corol 2-lipped : anthers, 5 oblong and 5 roundish : legume coriaceous, torulouse.

Crotolaria. Corol with the banner cordate, large: keel acuminate: filaments connate, with a dorsal fissure: style curved: legume pedicelled, turgid.

B. *Stamens in 2 sets; generally* 9 *in one set, and* 1 *alone in the other.*

1. *Legume many-seeded, stigma pubescent.*

Pisum. Calyx with the divisions leaf-like, about equal: banner protruding 2 folds: style compressed, carinate, villose above: legume without down at the suture.

Lathyrus. Calyx with the two upper divisions shorter: style flat, villose above, broader towards the top.

Vicia. Calyx emarginate above, 2-toothed; 3 strait long teeth below: banner emarginate: stigma bearded a short space on the lower side.

Phaseolus. Keel, stamens and style spirally twisted together.

Robinia. Calyx 4-cleft, upper division 2-parted: banner large, reflexed, roundish: legume gibbous, elongated.

2. *Legume many-seeded, stigma without hairs.*

Glycine. Calyx 2-lipped, the tooth of the lower lip longest: the end of the keel curling upwards, and in appearance pushing back the banner: style incurved with the keel: legume oblong, compressed.

Galega. Calyx with subulate teeth nearly equal: legume torulose, teretish.

3. *Legumes few-seeded.*

Medicago. The keel deflected from the direction of the banner: legume compressed, cochleate.

4. *Legumes about* 1*-seeded.*

Trifolium. Flowers sub-capitate: legume included in the calyx, not opening by valves, 1 to 4-seeded.

Melilotus. Flowers racemed: calyx tubular, 5-toothed: keel simple, shorter than the wings and banner: legume rugose, longer than the calyx.

Lespedeza. Calyx 5-parted, divisions nearly equal: keel of the corol transversely obtuse: legume lens-form, unarmed, 1-seeded.

5. *Legumes jointed, or in loments.*

Hedysarum. Calyx 5-cleft: keel of corol transversely obtuse: loment many-jointed, joints 1-seeded, compressed, generally hispid.

CLASS XVIII. SYNGENESIA.

ORDER I. POLYGAMIA ÆQUALIS.

A. *Florets ligulate.*

Tragopogon. Calyx simple, many-leaved: receptacle naked: egret plumose and stiped.

Leontodon. Calyx double: receptacle naked: egret stiped.

Lactuca. Calyx imbricate, cylindric, with the margin membranaceous: receptacle naked: egret simple, stiped: seed smooth.

Hieracium. Calyx imbricate, ovate; egret simple, sessile: receptacle naked or sub-pilose.—(From white becoming yellowish.)

Sonchus. Calyx imbricate, inflated: egret pilose, sessile: receptacle naked.

Krigia. Calyx simple, many-leaved: egret 5 membranous leaves with 5 alternating bristles: receptacle naked.

B. *Florets tubulous; flowers capitate.*

Cnicus. Calyx imbricate, with prickly scales: receptacle villose: egret plumose.

Carthamus. Calyx ovate, imbricate, with scales ovatish-leafy at apex: egret chaff-hairy or none: receptacle chaff-bristly.

Arctium. Calyx globose, with scales hooked at apex: egret chaff-bristly: receptacle chaffy.

C. *Florets tubulous; flowers discoid.*

Bidens. Calyx calycled, nearly equal; sometimes the flower is furnished with a few radiate florets: receptacle chaffy, flat: egret 2, 3 or 4 awns with reflexed and erect lateral prickles: seed 4-cornered.

Eupatorium. Calyx imbricated (rarely simple) oblong: style long, cloven half way down: egret pilose or rough papillose: receptacle naked.

ORDER II. POLYGAMIA SUPERFLUA.

A. *Flowers discoid.*

Gnaphalium. Calyx imbricate, with the marginal scales rounded, scarious, shortish, glossy, coloured: receptacle naked : egret pilose or plumose. (Florets often all perfect.)

Artemisia. Calyx imbricate, with scales rounded, converging : egret 0 : receptacle somewhat villose or nakedish (Flowers mostly round-headed.)

B. *Flowers radiate.*

Chrysanthemum. Calyx hemispherical, imbricate, with the scales membranous at the margin : receptacle naked : egret none, or a narrow margin.

Inula. Calyx imbricate or squarrose : egret simple : anthers ending in 2 bristles at the base : receptacle naked : ray florets numerous.

Erigeron. Calyx imbricate : egret pilose : receptacle naked : florets of the ray linear, very narrow, numerous.

Solidago. Calyx-scales imbricate, closed : egret simple : receptacle naked, furrowed with dots or punctures : ray-florets about 5, always fewer than 10, 2-toothed.

Senecio. Calyx cylindric ; leafets with withering; blackish tips, and a few small calycle leafets at the base : egret simple : receptacle naked.

Aster. Calyx imbricate, the inferior scales spreading : egret simple : receptacle naked, scrobiculate. (Florets of the ray more than 10, except in solidaginoides, and a few other species.)

Anthemis. Calyx hemispherical, nearly equal : egret 0, or a membraneous margin : florets of the ray more than 5 : receptacle chaffy, the chaffs flat, with a rigid acuminate apex.

ORDER III. POLYGAMIA FRUSTRANEA.

Rudbeckia. Calyx with a double order of scales : receptacle chaffy, conic : egret a 4-toothed margin or 0.

Helianthus. Calyx imbricate, sub-squarrose, leafy : receptacle flat, chaffy, egret 2-leaved, caducous.

Centaurea. Calyx various, mostly imbricate, roundish : egret simple, various : receptacle bristly : corols of the ray funnel-shape, longer, irregular.

ORDER IV. POLYGAMIA NECESSARIA.

Calendula. Calyx many-leaved, equal : receptacle naked : egret none : seeds of the disk membranaceous.

Iva. Calyx 3-leaved : styles 2, long : seed naked, obtuse : receptacle hairy : ray 5-flowered.

ORDER V. POLYGAMIA SEGREGATA.

Echinops. Proper calyx 1-flowered: corol tubular, perfect: receptacle setose: egret obsolete.

CLASS XIX. GYNANDRIA.

ORDER I. MONANDRIA—*or* ORDER II. DIANDRIA.

Calyx 5-leaved coloured, (or corol 5-petalled.)

A. *With a spur under the lower lip.*

Orchis. Calyx ringent-like, the upper leafets vaulted: lip dilated, spur long: anthers terminal, adnate.

Satyrium. Calyx ringent-like, upper leafet vaulted: lip linear, parted or sub-entire: spur short, sub-inflated and somewhat 2-lobed: anthers terminal, adnate.

B. *Lower lip without a spur.*

Neottia. Calyx ringent-like, the outer side leafets united before about the inflated base of the lip: anther parallel to the acuminate style, affixed behind.

Cymbidium. Calyx 4 or 5-leaved, erect or spreading: lip concave at the base, with a spreading border: anther a caducous lid; pollen globose.

Malaxis. Calyx spreading, turned upside down by the twisting of the peduncle when the petals open: lip ascending, concave, spreading: anther a lid.

Arethusa. Calyx somewhat ringent-like; leafets somewhat converging: anther a permanent lid: pollen powdery-granulated.

ORDER II. DIANDRIA.

Cypripedium. Calyx coloured, 4-leaved, spreading: lip inflated, hollow: style with a terminal lobe; and a petal-like appendage on the upper side.

ORDER V. PENTANDRIA.

Asclepias. Petals 5, reflexed: nectaries 5, concave, containing little horns: each stamen, with a pair of pendulous anthers, suspended from the stigma.

CLASS XX. MONOECIA.

ORDER III. TRIANDRIA.

Typha. Ament cylindric. Staminate flowers—calyx obsolete, 3-leaved: corol 0. Pistillate flowers—below the staminate : calyx 0 : corol 0 : seed 1, pedicelled ; the pedicels surrounded at the base with long hairs resembling egret.

Sparganium. Staminate flowers—ament roundish : calyx 3-leaved : corol 0. Pistillate flowers—calyx 3-leaved : corol 0 : stigma 2-cleft ; drupe juiceless, 1-seeded.

Zea. Staminate flowers—calyx-glume 2-flowered, awnless : corol glume awnless. Pistillate flowers—calyx-glume 2-valved : style 1, filiform, pendulous : seed solitary, immersed in an oblong receptacle.

Carex. Aments imbricate (usually in cylindric spikes.) Staminate flowers—calyx-scales solitary : corol 0. Pistillate flowers—calyx-scales solitary : corol inflated, monopetalous, 2-toothed at the apex : stigmas 2 or 3 : nut 3-sided, inclosed in the permanent corol, which becomes an utriculus-like permanent aril.

Comptonia Staminate flowers—ament cylindric with calyx-scales : corol 2-petalled : filaments 2-forked. Pistillate flowers—spike or ament ovate, corol 6-petalled : styles 2 : nut ovate.

ORDER IV. TETRANDRIA.

Urtica. Staminate flowers—calyx 4-leaved : corol 0 : nectary central cyathiform. Pistillate flowers—calyx 2-leaved (2-valved :) corol 0 : seed 1, glossy.

Morus. Staminate flowers—calyx 4-parted : corol 0. Pistillate flowers—calyx 4-leaved : corol 0 : styles 2 : calyx berry-like : seed 1.

Alnus. Staminate flowers—ament composed of wedge-form truncate 3-flowered receptacles : calyx a scale : corol 4-parted. Pistillate flowers—calyx 2-flowered scales : corol 0 : seed compressed, ovate, wingless.

ORDER V. PENTANDRIA.

Ambrosia. Staminate flowers—common calyx 1-leaved : corol 1-petalled, 5-cleft, funnel-form : receptacle naked. Pistillate flowers—calyx 1-leaved, entire, the swelling part 5-toothed, 1-flowered : corol 0 : nut from the indurated calyx, 1-seeded.

Amaranthus. Staminate flowers—calyx 3 or 5-leaved : corol 0 : stamens 3 or 5. Pistillate flowers—calyx and corol as the staminate : styles 3 : capsule 1-celled, opening transversely : seed 1.

ORDER VI. HEXANDRIA.

Zizania. Staminate flowers—calyx 0: corol-glume 2-valved, awnless, with pistillate flowers intermixed. Pistillate flowers—calyx 0: corol-glume 2-valved, cowled, awned: styles 2-parted; seed 1 invested in the plaited corol.

ORDER XIII. POLYANDRIA.

Sagittaria. Staminate flowers—calyx 3-leaved: corol 3-petalled: filaments mostly 24. Pistillate flowers—calyx and corol as in the staminate: pistils many: capsules aggregate, 1-seeded.

Calla Spathe ovate becoming expanded: spadix covered with the fructification: stamens intermixed. Staminate flowers—calyx and corol 0: anthers sessile. Pistillate flowers—calyx and corol 0: berries 1-celled crowned with the short style.

Arum. Spathe cowled: spadix not entirely covered with the fructification; being more or less naked above, with pistillate flowers beneath and staminate in the middle; (sometimes a few are staminate beneath:) berry mostly 1-seeded: generally cirrose-glandular beneath (often dioecious.)

Quercus. Staminate flowers—calyx sub-5-cleft: stamens 5 to 10. Pistillate flowers—calyx 1 leafed, entire, scabrous, a woody cup: styles 2 to 5: nut coriaceous, surrounded at the base by the permanent calyx.

Juglans. Staminate flowers—ament imbricate: calyx a scale: corol 6-parted: filamentes 4 to 18. Pistillate flowers—calyx 4-cleft superior: corol 4-cleft styles 2: drupe coriaceous or woody: nut sulcate.

Castanea. Polygamous. Staminate flowers—ament naked, linear: corol 5-petalled: stamens 10 to 20. Pistillate flowers—calyx 5 or 6-leaved, muricate: germs 3: stigmas pencil-form; nuts 3, with coriaceous putamen, inclosed in the calyx becoming echinate.

Betula. Staminate flowers—ament imbricate, scales peltate 3-flowered: calyx a scale: stamens 10 to 12. Pistillate flowers—calyx a 2-flowered scale: seed 1, winged.

Carpinus. Ament imbricate. Staminate flowers—calyx-scales ciliate: stamens 10. Pistillate flowers—calyx-scales 2-flowered: corol 3-cleft: nut ovate sulcate.

Ostrya. Ament imbricate. Staminate flowers—calyx a scale: filaments ramose. Pistillate flowers—ament naked: capsule inflated, imbricate, with one seed at its base.

Corylus. Staminate flowers—ament imbricate: calyx a scale: stamens about 8. Pistillate flowers—calyx 2-parted, lacerated: styles 2: nut ovate, surrounded by and included in the permanent leaf-like calyx.

ORDER XVI. MONADELPHIA.

Pinus. Staminate flowers—calyx 4-leaved: stamens many: anthers naked. Pistillate flowers—calyxes in strobiles or cones, scales 2-flowered: pistil 1: nut with a membranaceous wing (Perhaps more properly a samara.)

Cupressus. Staminate flowers—ament imbricate: calyx a scale: corol 0: anthers 4, sessile. Pistillate flowers—ament strobilaceous: calyx a 1-flowered scale: corol 0: stigmas 2, with concave points: nut angled.

Ricinus. Staminate flowers—calyx 5-parted: stamens numerous. Pistillate flowers—calyx 3-parted: styles 3, 2-cleft: capsules echinate, 3-celled, 3-seeded.

Cucurbita. Staminate flowers—calyx 5-toothed: corol 5-cleft: filaments 3. Pistillate flowers—calyx and corol like the staminate: pistil 3-cleft: pomaceous berry large, 3 to 5-celled: seeds thickened at the margin.

Cucumis. Staminate flowers—calyx 5-toothed: corol 5-parted: filaments 3. Pistillate flowers—calyx and corol like the staminate: stigmas 3, thick, 2-parted: berry with sharpish seeds.

CLASS XXI. DIOECIA.

ORDER II. DIANDRIA.

Salix. Staminate flowers—ament cylindric: calyx a scale, with a nectariferous gland at the base Pistillate flowers—ament and calyx like the staminate: styles 2-cleft: capsule 1-celled, 2-valved: seed with egret-like down.

Fraxinus. Perfect flowers—calyx 0, or 4-parted: corol 0, or 4-petalled: pistil 1: samara 1-seeded with a lanceolate wing, Pistillate flowers; calyx, corol and pistils same as perfect.

ORDER III. – TRIANDRIA.

Ficus. Common receptacle fleshy enclosing the apetalous florets, either in the same or in a distinct individual. Staminate flowers—calyx 3-parted.—Pistillate flowers—calyx 5-parted : pistil 1, lateral : ceed 1, covered with the closed permanent somewhat fleshy calyx.

* Carex.

ORDER IV. TETRANDRIA.

Myrica. Staminate flowers—ament oblong : calyx an ovate scale : corol 0. Pistillate flowers—calyx and corol like the staminate : styles 2 : drupe or berry 1-seeded.

ORDER V. PENTANDRIA.

Spinacia. Staminate flowers—calyx 5-parted : corol 0. Pistillate flowers—styles 4 : seed 1, within the indurated calyx.

Humulus. Staminate flowers—calyx 5-leaved : corol 0. Pistillate flowers—calyx 1-leafed, entire, oblique, spreading : styles 2 : seed 1, within the leaf-like calyx : inflorescence strobile-form.

Cannabis. Staminate flowers—calyx 5-parted. Pistillate flowers—calyx 5-leaved, entire, gaping laterally : styles 2 : nut 2-valved, within the closed calyx.

* Vitis.

ORDER VI. HEXANDRIA.

Lapathum. Calyx 3-leaved : not marked with grains : petals 3, converging : seed 1, 3-sided. (Distinguished from rumex, by always being diœcious.)

Smilax. Staminate flowers—calyx 5-leaved : corol 0. Pistillate flowers—calyx and corol like the staminate : styles 3 : berry 3-celled : seeds 2.

FROM *ORDER* VIII. OCTANDRIA, TO *ORDER* XIII. POLYANDRIA.

Populus. Staminate flowers—ament cylindric ; calyx a torn scale : corol turbinate, oblique, entire. Pistillate flowers—ament, calyx and corol like the staminate : stigma 4-cleft : capsule 2-celled : seed with egret-like hairs.

Menispermum. Staminate flowers—calyx 2-leaved : petals 4 or 6 outer and 8 inner : stamens 16. Pistillate flowers—corol like the staminate : 8 barren stamens : germs 2 or 3 : berries paired, 1-seeded.

* Thalictrum, Arum.

ORDER XVI. MONADELPHIA.

Juniperus. Staminate flowers—ament ovate : calyx a scale : stamens 3. Pistillate flowers—calyx 3-parted ; petals 3 : styles 3 : berry 3-seeded, consisting of the three unequal tubercles of the calyx. (Nut bony, 1-celled with balsamy glands at the base.)

Taxus. Staminate flowers—calyx about 4 bud-leaves : corol 0 : stamens many, anthers peltate, 8-cleft. Pistillate flowers—style 0 : receptacle acorncup-form ; nut ovate.

CLASS XXII. CRYPTOGAMIA.

ORDER I. FILICES.

Ferns are annulated, when each capsule has a kind of chain passing around it at about right angles with the suture. When the fruit is ripe, the chain in straitening opens the capsule ; it being attached by its ends to two contiguous edges of it.

A. *With annulated capsules.*

1. *Without involucres.*

Polypodium. Capsules disposed in round scattered dots, on various parts of the lower surface of the frond.

2. *With involucres.*

Onoclea. Fruit-dots indeterminate, capsules covering the whole lower surface of the frond ; involucre formed by turning in or rolling back the margin of the leaf, which opens inwards, in maturity, towards the midrib, or remains closed. (The fertile leaves are contracted and narrower than the barren ones.)

Pteris. Capsules arranged in a continued line along the very margin of the frond : involucre opening inwards. (When the leaves are extremely small, the rows of capsules on opposite sides meet and cover the lower surface like the above.)

Asplenium. Capsules in lines parallel to each other, situated exactly *upon* the secondary veins of the frond : involucres opening inwards. (By the secondary veins is meant those of the middle part of the disk, not the larger ones at the margin or midrib. The parallel lines of capsules may stand obliquely with respect to the midrib, but their direction must be parallel to each other.)

Adiantum. Capsules disposed in oblong spots arranged along the margin of the frond: involucre is formed by turning back the margin of the frond over the capsules, and it opens inwards. (The lines of oblong spots are generally along that margin, which may be considered the end of the leaf or of the segments of the leaf.)

Aspidium. Capsules in scattered roundish spots on various parts of the whole lower surface of the frond: involucre a kidney-form or round membrane, fastened to the frond in or near the centre of the fruit-dot, and opening on all sides. (The involucre, when a little opened, is strictly peltate.)

Dicksonia. Capsules in small roun dscattered fruit-dots at the margin of the frond: involucre double; one part is formed of the thin margin of the frond turned over upon the fruit-dots, the other is from the frond on the inward side of the fruit-dots, each part opening opposite to where it is fastened to the frond.

B. *With capsules not annulated.*

Osmunda. Capsules globose, pedicelled, radiate-striate or wrinkled, having a hinge at the joining of the two valves, which resembles part of the jointed rings of annulated ferns: the capsules either occupy the whole lower surface of the frond, or a panicled-raceme. (The parts of the frond occupied by the fruit are always more contracted than the barren parts.)

APPENDIX TO THE ORDER FILICES.

PTEROIDES.

Botrychium. Capsules coriaceous, globose, one-celled, smooth; they are disposed in spikes or racemes, generally open lengthwise, sometimes irregularly.

Lycopodium. Capsules mostly kidney-form or roundish, 2 or 4-valved opening elastically; they are placed under separate scales in a spike, or sometimes in the axils of leaves.

Equisetum. Fruit placed under peltate bodies which are arranged in whorls forming a spike-form raceme; four spiral filaments surround the seed (probably) which resemble green globules. (Fertile plants mostly leafless, the stems of all are jointed with toothed sheaths at every joint, and usually longitudinally striated and hollow.)

ORDER II. MUSCI.

A. *Capsules with a lid and without a peristome.*

Sphagnum. Calyptre breaks off transversely, leaving the lower half on the capsule: lid caducous.

B. *Capsule with a lid and furnished with a single peristome, proceeding from the outer surface of the capsule, or from both inner and outer.*

Dicranum. Each tooth split part of the way from the tip towards the base, incurved and solid, 16 in number.

Polytrichum. Tips of the teeth all meet in a flat membrane, which extends over most of the mouth of the capsule: calyptre mostly composed of hair.

C. *Capsule with a lid, and furnished with a single peristome proceeding only from the inner surface of the capsule.*

Barbula. Peristome consists of twisted filaments.

Diphyscium. Peristomes consist of wedge-shaped vein-like processes.

D. *Capsules with a lid, and furnished with a double peristome, the outer one consisting of* 8 *or* 16 *distinct teeth.*

Bryum. Inner peristome consists of a membrane terminating in pointed teeth not perforated, having between them very fine delicate hairs: peduncles terminal.

Hypnum. Inner peristome consists of a membrane terminating in pointed teeth not perforated, having between them very fine hairs, to be seen with a good magnifier: peduncles axillary.

E. *Capsule with a lid, and furnished with a double peristome, outer one consisting of* 16 *connected teeth.*

Funaria. Outer teeth oblique and connected at the tips: inner are 16 filaments lying flat: peduncles terminal.

ORDER III. HEPATICAE.

Jungermannia. Capsules 4-valved with chain-like seed-dispersers, peduncled, arising from a bell-form calyx. (An apophysis adjoins the capsule, and it has a silvery filamentous peduncle, which often grows several inches in one night. The peduncle rises from a bell-form calyx, which is more permanent than the fruit. In this calyx the fruit lies concealed a while, at length it opens and discloses a small shining black globule, which rises on the silvery peduncle and bursts into 4 valves.)

Marchantia. Capsules peduncled, bursting at their summits : seeds attached to elastic fibres ; the capsules are placed beneath umbrella-like stars or cones. (It agrees with some species of *jungermannia* in external appearance, but it is of a much firmer texture. The frond is always leafy, lobed, furnished with a strong midrib and beset beneath with villous roots. The disk of the leaf consists of a beautiful green net-work.) In the spring one of the leading species sends up ovate anthers or buds on pellucid filaments from the disk of the frond. Near the middle of the summer the umbrellas appear, bearing the fruit on or under the rays.

ORDER IV. ALGAE.

Fucus. Germs imbedded in the gelatinous substance of the frond, aggregate : seeds produced in clustered tubercles, which burst at their summits.

Ulva. Frond membranaceous or gelatinous : fruit in semi-transparent visicular membranes within the substance or under the general cuticle of the frond, either solitary or clustered.

Conferva. Consisting of herbaceous tubes or fibres, generally separated within by transverse partitions : seeds scattered through the joints, or contained in solitary closed tubercles attached to the tubes or fibres.

ORDER V. LICHENES.

Lecidea. *Spangles* sessile, with a flattish or convex disk : frond various, crustaceous ; uniform and limited, scattered and indeterminate, leafy, membranous, or stellate.

Gyrophora. *Buttons* superficial, flattish : frond leafy, peltate, between membranous and leafy.

Parmelia. *Shields* superficial or elevated, thick or submembranous, flattish, convex or concave, crowned with a free accessory border : frond various, crustaceous, leafy, branched or laciniated, cartilaginous, membranous or gelatinous. A vast genus. One of its best characters is that the shield has no border of its own substance ; but always has an accessary one of the substance of the crust.

Usnea. *Orbs* sub-coriaceous, flattened, peltate, naked and smooth on both sides, mostly much dilated ; disk first concave, then flat, even, subsequently rather convex and cracked, or warty, scarcely coloured; border either none or accessary, which is entire or toothed in the circumference, very often radiated: knobs on the same, or on a different plant, which are sessile, lateral, scattered; at first shield-like and sometimes in a manner bordered. finally convex and warty, coloured. This is the filamentous lichen, tapering, more or less jointed, having a central elastic medullary thread. It is sometimes called tree-moss.

ORDER VI. FUNGI.

Agaricus. Fungus with laminae underneath.

Merulius. Fungus with veins underneath.

Boletus. Fungus with pores underneath.

Hydnum. Fungus prickly underneath.

Peziza. Fungus concave above; hemispherical or bellform; seeds contained in the cup.

Lycoperdon. Fungus becoming powdery and fibrous within: seeds attached internally to the fibres.

Uredo. Fungus parasitical, consisting of a mealy powder, destitute of a case, growing from under the cuticles of leaves and stems, bursting at last, with an even margin.

Mucor. Fungus fugacious, heads at first semi-transparent, then becoming opake, fixed to simple or branched stalks.

Xylostroma. Fungus leathery, expanded, deformed, penetrating, smooth, even: seeds among the fibres, globular minute. (Growing in cleavages of decaying wood.)

LABELLING CATALOGUE.

20—16. ACALYPHA, 38. 96.

virginica (three seed mercury.)

8—1. ACER, 23. 66.

rubrum (soft maple, red maple. O. r. Ap. ♄) leaves 5-lobed, unequally sub-dentate, glaucous beneath : flowers in sessile umbels. Rarely dioecious. *dasycarpum* (silver maple.) *saccharinum* (sugar maple. O. y-r. M. ♄ .) leaves 5-parted, palmate, sinuate, acuminate-toothed, pubescent beneath. Polygamous. *striatum* (false dogwood, striped maple bush, Indian tobacco. O. g. M. ♄ .) stem marked with white longitudinal lines : leaves 3-lobed, acuminate, serrate : racemes pendant, petals oval. *spicatum* (mountain maple bush.) *negundo* (ash leaf maple.) *nigrum* (sweet tree.)

18—2. ACHILLEA, 49. 55.

millefolium (yarrow.) *ptarmica.*

21—5. ACNIDA, 53. 29.

cannabina (water hemp.) *rursocarpa.*

13—5. ACONITUM, 26. 61.

napellus (monk's hood. E. b. J. ♃.) flower cowled ; spur strait, obtuse ; lip lanceolate, bifid ; leaves 5-parted. *uncinatum* (wolf-bane. P. b. S. ♃.) stem zigzag : flowers with about 5 styles : leaves many lobed.

6—1. ACORUS, 2. 7.

calamus (sweet flag.)

22—1. ACROSTICHUM, 55. 5.

aureum (fork-fern.)

13—1. ACTAEA, 26. 61.

rubra (bane-berry.) *alba* (necklace weed.)

22—1. ADIANTUM, 55. 5.

pedatum (maidenhair. O. J. ♃.) frond pedate branches pinnate, leafets halved.

13—13. ADONIS, 26. 61.

autumnalis (pheasant's eye. E. Au. ⊙.) flowers 5 to 8-petalled ; fruit sub-cylindric.

22—6. ÆCIDIUM, 58. 1.

anemones. claytoniae. pyrolae. rubi.

17—10. ÆSCHYNOMENE, 32. 93.

hispida (false sensitive plant.)

7—1. ÆSCULUS, 23. 66.

hippocastanum (horse chesnut. E. J. ♄.) leaves digitate, divisions about 5 : corol 5-petalled.

22—6. AGARICUS, 58. 1.

campestris (eatable mushroom) convex, whitish-brown, spotted : laminae pink, becoming liver-colour : stem white and ruffled. *coccineus*, scarlet, conic, small : stem long, solid, a little crooked, woolly at the base. *piperitus. castaneus. caudicinus. rufo-violaceus. hypnorum. corticola. disseminatus. domesticus. rosaceus. inconstans. coriaceus. papyraceus. narcoticus. involutus. epiphyllus.*

6—1. AGAVE, 10. 15.

virginica, (agave.)

11—2. AGRIMONIA, 35. 92.

eupatoria (agrimony. O. y. Au. ♃.) cauline leaves interruptedly pinnate, the terminal one petioled : fruit hispid. *parviflora.*

10—5. AGROSTEMMA, 22. 82.

githago, (cockle. O. r. J. ⊙.) hirsute : calyx and corol about equal ; petals entire. *coronaria* (rose companion.)

3—2. AGROSTIS, 4 10.

spicaventi (bent-grass.) *tenuiflora. diffusa. sericea. filiformis. stricta. setosa. sobolifera. juncea. involuta. vulgaris* (redtop.) *clandestina. virginica. glauca. alba* (white top.) *mexicana. lateriflora. pungens.*

3—2. AIRA, 4. 10.

melicoides (hair-grass.) *pumila. obtusata. cespitosa. flexuosa. mollis. pallens. precox. purpurea.*

22—5. ALECTORIA, 57. 2.

jubata.

6—1. ALETRIS, 10. 16.

farinosa (false aloe, unicorn root.)

6—13. ALISMA, 5. 13.

plantago (water-plantain. O. w. Ju. ♃.) leaves ovate acute : fruit obtusely 3-cornered. *parviflora. subulata.*

6—1. ALLIUM, 9. 16.

porrum (leek.) *sativum* (garlic.) *vineale* (field garlic.) *oleraceum* (striped onion.) *ascalonicum* (shallot.) *triflorum* (mountain leek.) *canadense* (meadow garlic.) *cepa* (garden onion.) *tricoccum* (three-seed leek.) *fistulosum* (welch onion.) *schoenoprasum* (cives.) *fragrans* (false snow-drop. E. w. A.)

20—4. ALNUS, 50. 99.

incana. undulata. serulata (alder.) *glutinosa.*

3—2. ALOPECURUS, 4. 10.

pratensis (meadow-grass, foxtail.) *geniculatus* (floating foxtail.)

5—3. ALSINE, 22. 82.

media (chickweed. O. w. M. ♃.) stem with alternate lines of hairs on the sides : petals 2-parted : leaves heart-ovate.

16—13. ALTHAEA, 37. 74.

officinalis (marsh mallows.) *rosea* (hollyhock, E. ♂.) stem erect : leaves rough, heart-form, 5 to 7-angled, crenate. *ficifolia.* (fig-hollyhock.)

15—1. ALYSSUM, 39. 63.

saxatile (madwort, basket of gold.) *hyperboreum. sativum. incanum.*

20—5. AMARANTHUS, 54. 30.

albus (white coxcomb.) *graecizans. melancholicus* (love lies-bleeding.) *tricolor* (three-coloured coxcomb.) *lividus* (lead amaranth.) *oleraceus* (pot amaranth.) *hybridus. paniculatus. retroflexus* (rough amaranth. O. Au. ☉.) racemes pentandrous, triply-compound, compact, erect : branches pubescent : leaves ovate undulate. *hypochondriacus* (spleen amaranth.) *spinosus.*

6—1. AMARYLLUS, 9. 17.

atamasco (atamasco lily.) *formosissima* (jacobea.)

20—5. AMBROSIA, 54. 32.

trifida. *integrifolia.* *elatior* (hogweed. O. S. ⊙.) leaves doubly-pinnatifid, smoothish: petioles long ciliated: racemes terminal, panicled: stem wand-like. *artemisifolia.* *paniculata.* *heterophylla.*

4—1. AMMANNIA, 17. 91.

humilis (tooth-cup.)

5—2. AMMI. 45. 60.

capillaceum (bishop-weed.)

17—10. AMORPHA, 32. 93.

fruticosa (false indigo.)

5—1. AMPELOPSIS, 46. 72.

quinquefolia (false grape, creeper. O. w. Ju. ♄.) leaves in fives, toothed.

5—2. AMSONIA.

latifolia (beard throat.)

12—1. AMYGDALUS, 36. 92.

persica (peach. E. r. M. ♄.) serratures of the leaves all acute, flowers sessile, solitary. *nana,* (flowering almond.)

5—1. ANAGALLIS, 20. 34.

arvensis (red chickweed.)

5—1. ANCHUSA, 41. 42.

officinalis (buglos.)

10—1. ANDROMEDA, 18. 51.

hypnoides (moss bush.) *mariana.* *pulverulenta* (dust leaf.) *polifolia.* *arborea* (sorrel tree.) *paniculata* (white bush. w. J. ♄.) pubescent: leaves obovate-lanceolate acute sub-entire: branches flower-bearing, terminal, panicled, nakedish: glomerules peduncled: corol sub-globular, pubescent: anthers obtuse, beardless. *racemosa.* *axillaris.* *calyculata* (leather leaf.) *ligustrina.*

3—2. ANDROPOGON, 4. 10.

nutans (beard grass.) *macrourus* (Indian grass.) *dis-*

sitiflorus. *purpurascens*. *furcatus* (forked spike.) *ambiguus*.

13—13. ANEMONE, 26. 61.

hortensis (garden anemone.) *virginiana* (wind flower.) *aconitifolia*. *dichotoma*. *nemorosa* (low anemone.) *lancifolia*. *thalictroides* (rue anemone.)

5—2. ANETHUM, 45. 60.

graveolens (dill E.) fruit compressed: plant annual. *foeniculum*. (fennel.)

5—2. ANGELICA, 45. 60.

archangelica (archangel.) *atropurpurea*. *triquinata* (angelica.) *lucida* (nondo.)

13—13. ANNONA, 52. 76.

glabra (custard apple.)

18—2. ANTHEMIS, 49. 55.

nobilis (chamomile.) *arvensis*. *cotula* (mayweed. w. J. ⊙.) receptacle conic, chaff-bristly: seed naked: leaves 2-pinnate, leafets subulate 3-parted.

22—3. ANTHOCEROS, 57. 3.

levis (wax-liverwort.) *punctatus*.

2—2. ANTHOXANTHUM, 4. 10.

odoratum, (sweet vernal grass. M. ♃.) spike oblong ovate; florets subpeduncled, longer than the awn.

14—2. ANTIRRHINUM, 40. 40.

elatine (creeping snap-dragon.) *triornithophorum* (three-birds.) *linaria* (snap-dragon.) *canadense* (flax snap-dragon.)

18—1. APARGIA, 49. 53.

autumnalis (false hawk-weed.)

5—2. APIUM, 45. 60.

petroselinum (parsley. E. Ju. ♂.) cauline leaves linear: involucres minute. *graveolens* (celery.)

5—2. APOCYNUM, 30. 47.

androsaemifolium (dog-bane. r-w. J. ♃.) leaves ovate, glabrous: cymes lateral and terminal: tube of the coral longer than the calyx. *cannabinum* (Indian hemp.) *hypericifolium* (john's dog-bane.)

13—5. AQUILEGIA, 26. 61.

vulgaris (garden columbine.) *canadensis* (wild columbine. r. & y. Ap. ♃.) horns strait: stamens exsert.

15—2. ARABIS, 39. 63.

rhomboidea (wall cress.) *thaliana* (mousear cress.) *reptans.* *lyrata* (w. Ap. ☉.) leaves glabrous, radical ones lyrate, cauline ones linear. *hispida.* *hastata.* *falcata.*

17—10. ARACHIS, 32. 93.

hypogaea (false ground-nut, pea-nut.)

5—5. ARALIA. 46. 59.

spinosa (shot bush, angelica tree.) *hispida* (bristly stem sarsaparilla.) *racemosa* (spikenard) *nudicaulis* (wild sarsaparilla. w. M. ♃.) hardly a proper stalk, 1-leafed; the leaf thrice-ternate or thrice-quinate; leafets oblong-oval: scape naked, shorter than the leaf: umbels few.

10—1. ARBUTUS, 18. 51.

uva-ursi—(bear-berry.) *alpina.*

18—1. ARCTIUM, 49. 54.

lappa (burdock. r. Au. ♃.) cauline leaves heart-form petioled toothed: flowers panicled, globose: calyx smooth.

10—3. ARENARIA, 22. 82.

lateriflora (sandwort.) *serpyllifolia.* *glabra.* *stricta.* *squarrosa.* *rubra.*

19—1. ARETHUSA, 7. 21.

ophioglossoides (snakemouth. r. Ju. ♃.) root fibrous: scape with 2 distant leaves, 1 or 2 flowered; leaves oval-lanceolate: lip fringed. Flowers large. *bulbosa* (arethusa.) *trianthophorus.* *verticillata.* *medeoloides.*

13—1. ARGEMONE, 27. 62.

mexicana (horned poppey.)

3—2. ARISTIDA, 4. 10.

dichotoma (beard-grass.) *oligantha.*

19—6. ARISTOLOCHIA, 11. 23.

sipho (birthwort.) *serpentaria.*

12—1. ARMENIACA, 36. 92.

vulgaris (apricot.) *dasycarpa* (black apricot.)

13—2. ARNICA, 49. 55.

montana (arnic.)

12—5. ARONIA, 36. 92.

arbutifolia (red choak-berry.) *botryapium* (shad-bush. w. Ap. ♄.) leaves oblong-oval; cuspidate, glabrous: flowers racemed; petals linear: germs pubescent: segments of the calyx glabrous. *sanguinea* (bloody choak-berry.) *melanocarpa* (black choak-berry.) *ovalis* (medlar bush.)

18—2. ARTEMISIA, 49. 55.

abrotanum (southern wood.) *canadensis* (wild wormwood.) *pontica* (roman artemisia.) *absynthium* (wormwood.) *vulgaris* (mugwort.)

20—13. ARUM, 2. 7.

dracontium (green dragon.) *atrorubens* (brown dragon.) *triphyllum* (Indian turnip, wild turnip, false wake-robin. p. & g. M. .) sub-caulescent: leaves ternate; leafets ovate acuminate: spadix club-form: spathe ovate acuminate peduncled, with the lamina as long as the spadix. *virginicum* (poison arum.)

3—2. ARUNDO, 4. 10.

donax (reed grass.) *phragmites* (marsh reed grass.) *conoides* (compact reed grass.) *epigejos.* *canadensis.* *arenaria* (sand reed grass). *agrostoides.*

11—1. ASARUM, 11. 23.

canadense (white snake root, wild ginger. p. M. ♃.) leaves broad-kidney-form in pairs: calyx woolly deeply 3-parted, divisions sub-lanceolate reflected. Root aromatic. *virginicum.*

19—5. ASCLEPIAS, 30. 47.

syriaca (common milkweed. w-p. Ju. ♃.) stem very simple: leaves lanceolate-oblong gradually acute, downy beneath: umbels subnodding, downy. 3 to 5 feet high;

flowers in large close clusters sweet-scented. *obtusifolia. acuminate. amoena. purpurascens. viridiflora. variegata. incarnata. debilis. quadrifolia. laurifolia. verticillati. tuberosa. lanceolata.*

13—1. ASCYRUM, 20. 68.

crux-andreae (peter's wort.) *hypericoides.*

6—1. ASPARAGUS, 11. 12.

officinalis (asparagus. E. Ju. ♃.) stem herbaceous unarmed sub-erect terete: leaves bristle-form soft: stipules sub-solitary.

6—1. ASPHODELUS, 10. 14.

luteus (asphodel, king's spear.) *ramosus.*

22—1. ASPIDIUM, 55. 5.

cicutarium. acrostichoides. noveboracense. cristatum. obtusum. aculeatum. marginale (Ju. ♃) frond doubly-pinnate: lesser leafets oblong obtuse decurrent crenate, more deeply crenate at the base: fruit dots marginal: stipe chaffy. *filix-mas* (Ju.) frond doubly-pinnate, lesser leafets oblong obtuse serrate, serratures beardless: fruit-dots of the middle rib approximate: stipe and rachis chaffy. 2 or 3 feet high. *intermedium. spinulosum. dilatatum.*

22—1. ASPLENIUM, 55. 5.

rhizophyllum (walking leaf.) *angustifolium* (spleenwort.) *ebeneum. melanocaulon. thelypteroides. ruta-muraria. montanum.*

18—2. ASTER, 49. 55.

1. *Leaves entire.*

hyssopifolius (starflower.) *solidaginoides. ledifolius. rigidus. linariifoluis. linifolius. subulatus. foliolosus. tenuifolius. dumosus. ericoides. multiflorus. sparsiflorus. concolor. cornifolius. humilis. amygdalinus. salicifolius. aestivus. nova-angliae. cyaneus. phlogifolius. patens.*

2. *Leaves heart-form and ovate, serrate.*

undulatus. paniculatus. cordifolius. corymbosus. macrophyllus. chinensis (china aster.)

3. *Leaves lanceolate and ovate, lower ones serrate.*

amplexicaulis. prenanthoides. laevigatus. versicolor. mutabilis. laevis. coccinneus. puniceus. novi-belgii. spectabilis. serotinus. tardiflorus. blandus. acuminatus. conyzoides. radula. strictus. tradescanti. recurvatus. laxus. junceus. dracunculoides. miser. divergens. diffusus. pendulus.

17—10. ASTRAGALUS, 32. 93.

glaux (milk vetch.) *depressus* (trailing vetch.) *secundus. canadensis carolinianus.*

3—2. ATHEROPOGON, 4. 10.

apludoides (hair-beard.)

22—1. ATHYRIUM, 55. 5.

thelypteris (snuffbox fern.) *filix-femina. asplenoides. angustum. bulbiferum. tenue. rufidulum. punctilobum.*

13—13. ATRAGENE, 26. 61.

americana (false virgin bower.)

5—2. ATRIPLEX, 12. 29.

halimus (orach.) *hortensis* (garden orach.) *laciniata. patula. arenaria.*

5—1. ATROPA, 28. 41.

belladonna (deadly nightshade.) *physaloides.*

20—4. AUCUBA.

japonica (japan shrub.)

3—2. AVENA, 4. 10.

sativa (oats. E. J. ⊙.) panicled : calyx 2-seeded ; seeds smooth, one of them awned. First discovered in the island of Juan Fernandes. A variety is awnless and has black seeds. *sterilis* (animated oats.) *fatua. elatior. spicata. pensylvanica.*

5—1. AZALEA, 18. 50.

lapponica (mountain honeysuckle.) *procumbens. calendulacea. canescens. nudiflora* (early honeysuckle.) *nitida* (swamp honeysuckle.) *viscosa* (white honeysuckle.) *glauca* (fragrant honeysuckle.)

18—2. BACCHARIS, 49. 55.

halimifolia (groundsel tree.) *angustifolia* (ploughman's spikenard.)

22—5. BAEMYCES, 57. 2.

rosea. *byssoides.* *cariosa.* *coccifera.* *deformis.* *pyxidata.* *cornuta.* (brittle lichen.) *parecha,* lobes suberect, deep-many-cleft, subpinnate, narrowed ; cups suprafoliaceous, turbinate, horned-toothed : stems becoming branched, thick inflated ; branches very short projecting, denticulate at top ; knobs clustered, bay. *uncialis.* *rangiferina.*

14—1. BALLOTA, 42. 39.

nigra (false motherwort.)

18—1. BALSAMITA, 49. 55.

suavolens (costmary, sweet tansey.)

22—2. BARBULA, 56. 4.

apiculata (spiral tooth moss,) stem short, simple : leaves remotish lance-oblong, acuminate, erect, spread, capsule oblong ; lid beaked. *acuminata,* leaves linear : capsule cylindric, erect ; lid acuminate. *tortuosa.*

41—1. BARTONIA.

paniculata (screwstem.)

22—2. BARTRAMIA, 56. 4.

fontana (paper-tooth moss.) *crispa.*

14—2. BARTSIA, 40. 35.

coccinea (painted cup. y. & r. J. ♂.) leaves alternate linear gash-pinnatifid ; divisions linear : bracts dilated generally 3-cleft longer than the flowers. *pallida.*

22—5. BATHELIUM, 57. 2.

mastoideum (olive lichen.)

5—1. BATSCHIA, 41. 42.

canescens (puccoon, false bugloss.)

18—2. BELLIS, 49. 55.

perennis (daisy.)

6—1. BERBERRIS.

vulgaris (barberry. y. M. ♄.) branches punctate prickles mostly in threes : leaves obovate, remotely serrate : flowers racemed.

5—2. BETA, 12. 29.

vulgaris (beet.) *cicla* (white beet, scarcity.)

14—1. BETONICA, 42. 39.

officinalis (betony.)

20—13. BETULA, 50. 99.

populifolia (white birch, poplar birch.) *excelsa* (tall birch, yellow birch.) *rubra* (red birch.) *papyracea* (paper birch, canoe birch.) *lenta* (spicy birch, cherry birch. M. ♄.) leaves heart-ovate sharp-serrate acuminate ; nerves and petioles pilose beneath : scales of the strobile glabrous with obtuse equal lobes having elevated veins. *glandulosa* (scrub birch.) *pumila* (dwarf birch.)

18—2. BIDENS, 49. 55.

cernua (water beggar-ticks.) *beckii* [lately discovered near Schenectady by Dr. Lewis Beck, and named by Dr. John Torry.] *chrysanthemoides* (daisy beggar-ticks.) *frondosa* (burr-marygold.) *connata*. *pilosa*. *bipinnata* (hemlock beggar-ticks.)

14—2. BIGNONIA, 40. 45.

radicans (trumpet flower.)

22—1. BLECHNUM, 55. 4.

borealis (Roman fern.)

1—2. BLITUM, 12. 29.

capitatum (strawberry blite. r. J. ☉.) heads in a terminal spike, not intermixed with leaves : leaves triangular toothed. *virgatum* (slender blite.)

20—4. BOEHMERIA, 53. 98.

cylindrica (false nettle, round head.) *lateriflora*.

22—6. BOLETUS, 58. 1.

bovinus (honey-comb toadstool.) *edulis*. *communis*. *perennis*. *lucidus*. *villosus*. *igniarius* (touchwood,) tubes very slender with fine pores, yellowish changing to red-brown : pileus in the form of a horse's hoof. *versicolor*, tubes short minute : pileus thin, velvety, striped with various-coloured concentric circles. Smaller than igniarius. *frumentarius*. *hepaticus*. *cinnabarinus*.

18—2. BOLTONIA, 49. 55.

asteroides (false aster.) *glastifolia* (false chamomile.)

5—1. BORAGO, 41. 42.

officinalis (borage. E. b. Ju. ☉.) leaves alternate : calyx spreading. *africana*.

22—1. BOTRYCHIUM, 55. 5.

fumarioides (grape fern.) *obliquum*. *dissectum*. *virginicum*. *gracile*.

14—1. BRACHYSTEMUM, 42. 39.

verticillatum (virginian thyme.) *lanceolatum*. *virginicum*.

15—2. BRASSICA, 39. 63.

orientalis (perfoilate cabbage.) *napus* (kale or cole.) *rapa* (turnip.) *oleracea* (common cabbage, including all the varieties caused by culture. E. ♂.) root caulescent terete fleshy : leaves smooth glaucous repand and lobate. *ruta-baga*.

3—2. BRIZA, 4. 10.

canadensis (quake grass. ♃.) panicle lax ; spikelets erect 4 to 20-flowered, the common glume smallish ; outer valve of the flower acute ovate : leaves long : culm erect. *eragrostis*. *media*. *maxima* (rattlesnake grass.)

6—1. BROMELIA, 10.

ananas (pine apple.)

3—2. BROMUS, 4. 10.

secalinus (chess. J. ☉.) panicle nodding ; spikelets ovate compressed : glumes naked distinct ; awns subulate straitish-zigzag. *ciliatus*. *pubescens* (broom grass.) *purgans*.

21—4. BROUSSONETIA, 50. 99.

papyrifera (paper mulberry.)

14—2. BROWALLIA, 40. 40.

elata.

22—2. BRYUM, 56. 4.

conoideum (thread moss.) *androgynum. palustre. microodontum. heterostachum.*

14—2. BUCHNERA, 40. 34.

americana (blue-hearts.)

15—1. BUNIAS, 39. 63.

maritima (sea rocket.) *edentula.*

18—2. BUPHTHALMUM, 49. 55.

grandiflorum (ox-eye.)

22—2. BUXBAUMIA, 56. 4.

aphylla (leafless moss.)

20—4. BUXUS, 38. 96.

sempervirens (box.)

22—5. BYSUS, 57. 2.

lactifera. aurea (Castleton on rocks.)

18—1. CACALIA, 49. 55.

suaveolens (wild caraway.) *atriplicifolia* (orach caraway.) *reniformis.*

12—1. CACTUS, 13. 85.

flagelliformis (creeping cereus.) *opuntia* (prickly pear.)

18—4. CALENDULA, 49. 55.

officinalis (pot-marygold. E. y. ⊙.) seed keeled, muricate, incurved.

22—5. CALICIUM, 57. 2.

strigonelium (fungus lichen.)

20—13. CALLA, 2. 7.

palustris (water arum. w. Ju. ♃.) leaves sub-roundish heart-form acute: spathe ovate cuspidate spreading when mature. Grows in wet places.

4—1. CALLICARPA, 43. 38.

americana (bermuda mulberry.)

2—1. CALLISTACHIA, 40. 35.

virginica (Culver's physic. w. Au. ♃.) spikes terminal: leaves in fours or fives.

1—2. CALLITRICHE, 12. 6.

verna (water chickweed or starwort. w. M. ☉.) upper leaves spatulate obovate, lower ones linear obtuse and emarginate, C. heterophylla. *intermedia.* *autumnalis.* *brevifolia.*

13—13. CALTHA, 26. 61.

palustris (American cowslip. y. Ap. ♃.) stem erect corymbed: leaves heart-kidney-form, lobes spreading, acute-crenate all around; floral leaves sub-sessile: petals ovate. *ficaroides* (fig cowslip.) *flabellifolia.* (tooth-leaf cowslip.) *integerrima.*

12—13. CALYCANTHUS, 35. 92.

floridus (carolina allspice.)

5—1. CAMPANULA, 29. 52.

grandiflora (great bellflower.) *rotundifolia* (flax bellflower, hair-bell. b. Ju. ♃.) glabrous; radical leaves kidney-heartform crenate; cauline ones linear entire. *americana.* *nitida.* *acuminata.* *erinoides* (prickly bellflower.) *medium* (canterbury bells.) *speculum* (venus' looking glass.) *perfoliata* (clasping bellflower.)

21—5. CANNABIS, 53. 98.

sativa (Hemp. E. g. Au. ☉.) stem pilose: leaves digitate serrate pilose.

5—1. CAPSICUM, 28. 41.

annuum (guinea pepper, E. w. Au. ☉.) stem herbaceous: peduncles solitary.

15—2. CARDAMINE, 39. 63.

impatiens (cuckow flower.) *rotundifolia.* *pensylvanica* (american watercress. w. M. ♃.) glabrous, branching: leaves pinnate: leafets roundish-oblong, obtuse, tooth-angled. *virginica.* *teres.* *hirsuta.*

8—3. CARDIOSPERMUM, 23. 65.

halicacabum (heart-seed.)

18—1. CARDUUS, 49. 54.

pectinatus (comb thistle.)

20—3. CAREX, 3. 9.

Stigmas two.

scirpoidea (sedge.) *sterilis* *cephalophora.* *arenaria.* *bromoides.* *retroflexa.* *stipata.* *muricata.* *muhlenbergii.* *multiflora.* *sparganioides.* *divulsa.* *rosea.* *paniculata.* *leporina.* *scirpoides.* *lagopodioides.* *ovalis.* *scoparia.* *curta.* *remota.* *festucacea.* *saxatilis.* *caespitosa.* *crinita.* *acuta.*

Stigmas three.

fraseri. *wildonowii.* *polytrichoides.* *pedunculata.* *ovata.* *virescens.* *hirsuta.* *buxbaumii.* *trichocarpa.* *varia.* *subulata.* *marginata.* *vestita.* *tentaculata.* *miliaris.* *lupulina.* *flava.* *oligocarpa.* *folliculata.* *pubescens.* *plantaginea.* *anceps.* *granularis.* *conoidea.* *tetanica.* *laxiflora.* *hystericina.* *distans.* *flexuosa.* *digitalis.* *umbellata.* *miliacea.* *pseudo-cyperus.* *recurva.* *pellita.* *lacustris.* *vesicaria.* *bullata.*

20—13. CARPINUS, 50. 99.

americana (hornbeam. g. M. ♄) leaves oblong-ovate, acuminate, unequally serrate : scales of the strobile 3-parted.

18—1. CARTHAMUS, 49. 54.

tinctorius (false saffron. E. y. J. ☉.) leaves ovate, entire serrate-aculeate. *coerulius.*

5—2. CARUM, 45. 60.

carui (caraway.)

10—1. CASSIA, 33. 93.

senna (Egyptian senna.) *marilandica* (senna.) *chamaecrista* (cassia, partridge pea.) *fasciculata.* *nictitans.*

22—13. CASTANEA, 50. 99.

americana (chesnut. g. J. ♄.) leaves lance-oblong, sinuate-serrate, with the serratures mucronate, glabrous both sides. *pumila* (chinquapin.)

2—1. CATALPA, 40. 45.

syringaefolia (catalpa tree. w. & p. Ju. ♄.) leaves cordate, flat.

5—2. CAUCALIS, 45. 60.

mauritania (base parsley.)

6—1. CAULOPHYLLUM, 24. 61.

thalictroides (popposeroot, false cohosh.)

5—1. CEANOTHUS, 43. 95.

americanus (New-Jersey tea. w. J. ♄.) leaves ovate acuminate, serrate, 3-nerved, pubescent beneath.

5—1. CELASTRUS, 43. 93.

scandens (false bittersweet, staff tree. y-w. J. ♄.) stem twining.

5—1. CELOSIA, 42. 30.

cristata (cock's crest. E. Ju. ☉.) leaves oblong-ovate : peduncles terete, sub-striate : spikes oblong.

5—2. CELTIS, 53. 99.

occidentalis (nettle tree.) *crassifolia* (hag-berry, hoop-ash.)

3—1. CENCHRUS, 4. 10.

echinatus (hedgehog grass.) *tribuloides.*

18—3. CENTAUREA, 49. 54.

solstitialis. *cyanus* (blue-bottle. E. b. Ju. ☉.) scales of the calyx serrate leaves linear entire ; lower ones toothed. *scabiosa* (scabious centaury.) *centaurium* (great centaury.) *jacea* (knapweed.) *suaveolens* (yellow sultan.) *benedicta* (blessed thistle.) *moschata* (sweet sultan.)

4—1. CEPHALANTHUS, 48. 57.

occidentalis (button bush. g. Ju. ♄.) leaves opposite and in threes.

10—5. CERASTIUM, 22. 82.

vulgatum (mousear chickweed w. Ap. ☉.) hirsute, viscid, cespitose : leaves ovate : petals oblong, about equal to the calyx : flowers longer than the peduncle. *semidecandrum.* *arvense.* *dichotomum.* *viscosum.* *tenuifolium.*

20—13. CERATOPHYLLUM, 15. 16.

demersum (hornwort.)

10—1. CERCIS, 33. 93.

canadensis (red bud, judas tree.)

5—1. CERINTHE, 41. 42.

major (honey wort.)

22—5. CETRARIA, 57. 2.

islandica (iceland lichen.) *lacunosa.* *juniperina.*

5—2. CHAEROPHYLLUM, 45. 60.

procumbens (chervil.) *claytoni* (poison cicily.)

20—1. CHARA, 15. 6.

vulgaris (feather-beds.) *foliosa.* *flexilis.*

22—1. CHEILANTHES, 55. 5.

vestita (lip fern.)

15—2. CHEIRANTHUS, 39. 63.

cheiri (wall-flower.) *fenestralis* (waved wall-flower.) *annuus* (stock july-flower. E. Ju. ☉.) leaves lanceolate, subdentate, obtuse, hoary: silique cylindric with an acute apex. *incanus* (brompton stock, brompton queens.)

13—1. CHELIDONIUM, 27. 63.

majus (celandine.)

14—2. CHELONE, 40. 45.

glabra (snakehead. w. & r. Ju. ♃.) leaves opposite, lance-oblong, acuminate, serrate; spikes terminal, dense-flowered.

5—2. CHENOPODIUM, 12. 29.

bonus-henricus (english mercury.) *rubrum* (rusty pig-weed.) *album* (pigweed. g. Ju. ☉.) leaves rhomboid-ovate, erose, entire behind, the upper ones oblong entire, seeds smooth. *viride* (green pigweed.) *hybridum.* *botrys* (oak of jerusalem.) *ambrosioides* (sweet pigweed.) *anthelmenticum* (wormseed.) *maritimum* (sea pigweed.) *glacum.* *scoparium* (summer cypress.)

10—1. CHIMAPHILA, 18. 51.

maculata (spotted winter-green.) *umbellata* (prince's pine, bitter wintergreen, pipsisewa. r-w. Ju. ♃.) leaves wedge-lanceolate, with an acute base: scape corymbed: filaments glabrous.

2—1. CHIONANTHES, 44. 37.

virginica (fringe tree.)

5—1. CHIRONIA. 20. 40.

angularis (American century.) *gracilis.* *chloroides.* *stellaris.* *calycosa.* *paniculata.*

18—2. CHRYSANTHEMUM, 49. 55.

leucanthemum (J. w. & y. ♃.) leaves clasping, lanceolate serrate, cut-toothed at the base: stem erect branching. *parthenium* (feverfew.) *coronarium* (garden chrysanthemum.)

8—3. CHRYSOSPLENIUM, 23. 65.

oppositifolium (golden saxifrage, water-carpet. y-r. M. ♃.) leaves opposite, roundish, slightly crenate, tapering for a little distance to the petiole.

18—1. CICHORIUM, 49. 53.

intibus (succory or endive.) *endivia* (garden endive.)

5—2. CICUTA, 45. 60.

virosa (water hemlock.) *bulbifera.* *maculata* (musquash plant.)

13—1. CIMICIFUGA, 26. 62.

serpentaria (bugbane, black snakeroot, cohosh. w. Ju. ♃.) leaves decompound; leafets ovate-oblong, gash-toothed; racemes in wand-like spikes: sometimes monogynious.

18—2. CINERARIA, 49. 55.

heterophylla (ashwort.)

1—2. CINNA, 4. 10.

arundinacea (indian reed.)

2—1. CIRCAEA, 48. 88.

lutetiana (enchanter's nightshade. r-w. Ju. ♃.) stem erect: leaves ovate, denticulate, somewhat glabrous. Var. *alpina.*

13—1. CISTUS, 20. 80.

canadensis (rock-rose, frost plant. y. J. ♃.) without stipules, erect; leaves alternate erect linear-lanceolate, flat, tomentose beneath; divisions of the calyx broad-ovate acuminate: stamens declined: capsules shorter than the calyx.

13—1. CITRUS, 18. 79.

aurantium (orange tree.) *medica* (lemon tree.) Var. *limon* (lime tree.)

22—6. CLATHRUS, 58. 1.

cancellatus (latticed fungus.)

22—6. CLAVARIA, 58. 1.

gyrans (club fungus,) cylindric, white, rather tapering at the ends: stem capillary, pellucid, simple. *pistillaris. formosa. grisea. corniculata.*

5—1. CLAYTONIA, 13. 86.

virginica (spring beauty. w. & r. Ap. ♃.) leaves lance-linear: raceme solitary: leaves of the calyx acutish: petals obovate, retuse: root tuberous. *spatulata* (spring beauty.)

13—13. CLEMATIS, 26. 61.

viticella (purple virgin's bower.) *viorna* (leather flower.) *virginica* (virgin's bower. w. Ju. ♄.) climbing: leaves ternate; leafets ovate, subcordate, gash-toothed and lobate: corymbs dichotomous, few flowered: petals longer than the stamens. Often dioecious. *flammula* (sweet virgin's bower.) *ochroleuca.*

6—1. CLEOME, 25. 64.

dodecandra (false mustard.) *pentaphylla.*

10—1. CLETHRA, 18. 51.

alnifolia (spiked alder, sweet pepper bush.)

22—2. CLIMACIUM, 56. 4.

dendroides (tree moss)

14—1. CLINOPODIUM, 42. 39.

vulgare (field thyme.)

18—1. CNICUS, 49. 54.

lanceolatus (common thistle. p. J. ♂.) leaves decurrent, hispid, pinnatifid; divisions 2-lobed, divaricate, spinose:

calyx ovate with spiderweb-like pubescence ; scales lanceolate, spinose, spreading. *discolor*. *altissimus* (tall thistle.) *arvensis* (canada thistle.) *horridulus*. *muticus*.

15—1. COCHLEARIA, 39. 63.

officinalis (scurvy grass.) *armoracia* (horse radish. E. w. J. ♃.) radical leaves lanceolate, crenate ; cauline ones gashed.

20—3. COIX, 4. 10.

lachryma (job's tear.)

14—1. COLLINSONIA, 42. 39.

canadensis (horse balm, rich-weed. y. Au. ♃.) leaves heart-oval : teeth of the calyx short, subulate, about equal to the tube.

17—10. COLUTEA, 32. 93.

arborescens (bladder senna.) *vesicaria* (E. y. Ju.)

12—13. COMARUM, 35. 92.

palustre (marsh fivefinger. p. Ju. ♃.) leafets in threes, fives or sevens, serrate.

3—1. COMMELINA, 6. 13.

communis (day-flower.) *erecta*. *virginica* (long-leaved day flower.)

20—3. COMPTONIA. 50. 99.

asplenifolia (sweet fern.)

22—4. CONFERVA, 57. 2.

rivularis, black-green, closely compacted and often twisted, joints shortish. *velutina*, green entangled, erect, short, slender, obtuse, joints short and slightly swelling. *fluviatilis* (river greenhair.) divisions rather rigid, mostly alternate, tapering to both ends : joints long, dilated 2-ways, partitions warty, swelled. *glomerata*, branches alternate ; branchlets one-way, fascicled pencilform : joints cylindric, rather long : partitions pellucid. *diaphana*.

5—2. CONIUM, 45. 60.

maculatum (poison hemlock.)

6—1. CONOSTYLIS.

americana (weed-grass.)

6—1. CONVALLARIA, 11. 12.

majalis (lily of the valley. E. w. Ju. ♄.) scape naked, smooth: leaves ovate. *angustifolia*. *canaliculata*. *pubescens*. *multiflora* (giant solomon seal.) *umbellulata*. *latifolia*. *racemosa*. *stellata*. *ciliata*. *trifolia*. *bifolia*. (dwarf solomon seal)

6—1. CONVOLVULUS, 29. 43.

arvensis (bind-weed.) *sepium* (field bind-weed. w. & r. J. ♃.) twining: leaves sagittate, with the apex acute and the lobes truncate entire. *panduratus* (mechoacan.) *batatas* (sweet potatoe.) *jalapa* (jalap.) *stans* (dwarf morning glory.) *repens*. *sagittifolius* (arrow bindweed.) *spithameus*. *tricolor*.

18—2. CONYZA, 49. 55.

bifrons (plowman's wort.) *marilandica* (camphor plant.)

13—13. COPTIS, 26. 61.

trifolia (gold-thread. w. M. ♃.) scape 1-flowered: leaves ternate.

18—3. COREOPSIS. 49. 55.

tripteris (tickseed sunflower.) *trichosperma*. *dichotoma*. *alternifolia*.

5—2. CORIANDRUM, 45. 60.

sativum (coriander. E. w. J. ⊙.) fruit globose calyx and style permanent.

22—5. CORNICULARIA, 57. 2.

tristis (horned lichen.)

4—1. CORNUS, 45. 58.

canadensis (dogweed. w. M. ♃.) harbaceous: leaves at the top, whorled, veiny: involucres ovate, acuminate: fruit globose. *florida* (false box, dogwood-tree.) *mascula* (cornelian cherry.) *sanguinea* (red osier.) *alba* (white dogwood.) *sericea*. *alternifolia*. *circinata*. *stricta*. *paniculata* (bush dogwood.)

17—10. CORONILLA, 32. 93.

emerus (E. Au. ♃.)

17—6. CORYDALIS, 24. 62.

cucullaria (colic weed.) *fungosa* (climbing colic weed.) *glauca*. *formosa*. *aurea*.

20—13. CORYLUS, 50. 99.

avellana (filbert.) *americana* (hazel nut. Ap. ♄.) leaves broad-cordate: calyx of the fruit hispid with glandular heads at the ends of the hairs, campanulate, longer than the roundish nut, limb spreading, tooth-serrate. *rostrata* (beaked hazel.)

12—5. CRATAEGUS, 36. 92.

coccinea (thorn bush.) *pyrifolia* (pearleaf thorn.) *populifolia.* *elliptica.* *glandulosa.* *flava* (yellow-berried thorn.) *punctata.* *crus-galli.* *oxyacantha* (quickset.)

3—1. CROCUS, 6. 18.

officinalis (saffron. E. y. ♃.) leaves linear with revolute margins: stigma exsert, with long linear segments. Var. *sativus,* having violet corols.

18—10. CROTOLARIA, 32. 93.

sagittalis (rattle-box. y. Ju. ⊙.) hirsute, erect, branching: leaves simple lance-oblong: stipules lanceolate, accuminate decurrent. *parviflora.*

6—1. CRYPTA.

minima.

10—3. CUCUBALUS, 22. 82.

behen (bladder campion.) *stellatus.*

20—16. CUCUMIS, 34. 97.

colocynthis (bitter apple.) *anguria* (prickly cucumber.) *anguinis* (snake cucumber.) *melo* (musk-melon.) *sativus* (cucumber.)

20—16. CUCURBITA, 34. 97.

ovifera (egg-squash.) *verrucosa* (club squash.) *melopepo* (flat squash.) *pepo* (pumpkin.) *citrullus* (water melon.) *lagenaria* (gourd, calabash.)

14—1. CUNILA, 42. 39.

mariana (dittany.)

11—1. CUPHEA.

viscosissima (waxweed.)

20—16. CUPRESSUS, 51. 100.

disticha (cypress tree.) *thyoides* (white-cedar. ♄.)

branchlets compressed: leaves imbricate four ways, ovate, tubercled at the base: strobile globular.

5—2. CUSCUTA.

americana (dodder. w. Au. ☉.) flowers peduncled, umbelled, 5-cleft. A bright yellow leafless vine.

22—6. CYATHUS, 58. 1.

striatus (tunnel fungus.) *lentiferus*. *olla*.

19—1. CYMBIDIUM, 7. 21.

pulchellum (grass pink. r. Ju. ♃.) leaves radical, ensiform, nerved: scape few-flowered: lip erect, slender at the base; lamina spread: disk concave bearded. *hyemale* (adam and eve, putty root.) *corallorhizum* (coral root.) *odontorhizum* (toothed coral.)

19—5. CYNANCHUM, 30. 47.

obliquum (choak-dog.)

18—1. CYNARA, 49. 54.

cardunculus (cardoon.) *scolymus* (garden artichoke.)

5—1. CYNOGLOSSUM, 41. 42.

officinale (hound-tongue. p. J. ♂.) very soft-pubescent: leaves broad-lanceolate, sessile: panicled-racemes. *amplexicaule*.

3—1. CYPERUS, 3. 9.

kyllingeoides. *poaeformis* (g-p. Au. ♃.) spikelets oblong, flat, fasicle-corymbed; fascicles sessile and peduncled: involucre 3-leaved, very long. *uncinatus*. *compressus*. *filiculmis*. *tenuis*. *brizeus*. *inflexus*. *diandrus*. *flavicomus*. *phymatodes*. *erythrorhizus*. *parviflorus*. *flavescens*. *strigosus*. *virens*. *tuberosus* (nut-grass.) *aestuarius*.

19—2. CYPRIPEDIUM, 7. 21.

candidum (white ladies' slipper.) *parviflorum*. *pubescens* (yellow ladies' slipper. M. ♃.) stem leafy: lip of the style triangular oblong, obtuse: outer petals oblong-ovate, acuminate; inner ones very long, linear, contorted: lip compressed, shorter than the petals. *spectabile* (gay ladies' slipper.) *humile* (low ladies' slipper. w. & p. M. ♃.) scape leafless 1-flowered: radical leaves in pairs, oblong, obtuse : lip of the style round-rhomboid, acuminate, deflexed ; lip longer than the lanceolate petals, split before.

3—2. DACTYLIS, 4. 10.

glomerata (orchard grass. J. ♃.) panicle one-sided, glomerate.

12—13. DALIBARDY, 35. 92.

repens. *fragarioides* (dry strawberry. y. M. ♃.) leaves ternate.

8—1. DAPHNE.

mezereum (mezereon.) *odora* (sweet mezereon.)

21—13. DATISCA, 54.

hirta (false hemp.)

5—1. DATURA, 28. 41.

stramonium (thorn apple. w-b. Au. ⊙.) pericarps spinose, erect, ovate : leaves ovate, glabrous. Odour very disagreeable. *tatula*.

5—2. DAUCUS, 45. 60.

carota (carrot. E. w. Ju. ♂.) seeds hispid : divisions of the leafets narrow-linear, acute.

11—1. DECUMARIA, 19. 89.

sarmentosa.

18—5. DELPHINIUM, 26. 61

consolidum (larkspur. E. b. Ju. ⊙.) nectaries 1-leaved : stem subdivided. *ajacis* (rocket larkspur.) *exaltatum*. *azureum*. *staphisagria*.

15—2. DENTARIA, 39. 63.

diphylla (tooth-root, trickle. y. & r. M. ♃.) stem with 2 leaves near each other. *lacinata*.

10—2. DIANTHUS, 22. 82.

barbatus (sweet william. E. r. & w. Ju. ♃.) flowers fascicled. *armeria*. *cariophyllus* (carnation. E. r. & w. ♃.) flowers solitary : scales of the calyx subrhomboid, very short : petals crenate, beardless. *chinensis* (china pink.) *plumarius* (single pink.)

5—1. DIAPENSIA, 21. 43.

lapponica. *cuneifolia*.

22—1. DICKSONIA, 55. 5.

pilosiuscula, frond doubly-pinnate ; leafets lance-oblong, pinnatifid.

22—2. DICRANUM, 56. 4.

scoparium (swamp fork moss) branched, erect : leaves lance-awlform, spread at top : capsule solitary, oblique, awn with an awl-form lid *heteromallum* (fork moss) nearly simple : leaves cutlass-form, capillary, broader at the base : capsule obovate, gibbous, inclined : lid awl-form, incurved. *glaucum*. *strictum*. *ambiguum*. *xanthodon*. *tenue*. *purpurascens*. *subbassilaris*. *longirostrum*. *sciuroides*. *tortila*.

22—1. DIDYMODON, 56. 4.

lineare (double-tooth moss.)

5—1. DIERVILLA, 48. 58.

humilis (bush honeysuckle. y. Ju. ♄.) peduncles axillary and terminal, dichotomous, 3-flowered : leaves ovate, serrate.

14—2. DIGITALIS. 40. 40.

purpurea (foxglove.) *intermedia*.

3—2. DIGITARIA, 4. 10.

sanguinalis (finger-grass. g-p. Ju. ⊙.) spikes many : flowers imbricate, in pairs. *paspalodes*. *pilosa*. *dactylon*.

3—1. DILATRIS.

tinctoria (red root.)

10—1. DIONAEA, 14. 73.

muscipula (Venus' flytrap.)

21—6. DIÓSCOREA, 11. 12.

villosa (yam-root.) *glauca*.

21—13. DIOSPYROS, 18. 41.

virginiana (persimon, seeded plum.)

22—2. DIPHYSCIUM, 56. 4.

foliosum, leaves linear, acuminate : capsule ventricose, with no perceptible peduncle.

4—1. DIPSACUS, 48. 56.

fullonum (teasel. E. w. Ju. ♂.) leaves sessile, serrate : chaff hooked. *sylvestris* (wild teasel. Ju. ♂.) leaves connate sinuate : chaff strait.

8—1. DIRCA, 31. 25.

palustris (leather-wood, moose-wood. y. Ap. ♄.) leaves oval : flowers axillary, 2 or 3 in a hairy, bud-like involucre.

5—1. DODECATHEON, 20. 34.

meadia (false-cowslip.) *integrifolium.*

17—10. DOLICHOS, 32. 93.

purpureus (cowhage, or cowitch.)

18—2. DORONICUM, 49. 55.

nudicaule (leopard's bane.)

15—1. DRABA, 39. 63.

verna (whitlow grass.) *caroliniana.* *arabisans.*

6—1. DRACAENA, 11. 12.

borealis (wild lily of the valley, or dragoness plant. g. y. J. ♃.) subcaulescent : leaves oval-obovate, margin ciliate.

14—1. DRACOCEPHALUM.

virginianum (dragon-head.) *canariense* (balm of gilead herb.) *denticulatum.*

5—5. DROSERA, 14. 64.

rotundifolia (sundew. y-w. Au. ♃.) scape simple ; leaves nearly orbicular, narrowed at the base ; petioles long downy. *longifolia.* *filifolia.*

3—1. DULICHIUM, 3. 9.

spathaceum (galingale. g-y. Ju. ♃.) culm 3-cornered, leafy : spikelets spreading, about 6-flowered.

19—5. ECHINOPS, 49. 55.

sphaerocephalus (globe thistle.)

5—1. ECHIUM, 41. 55.

vulgare (viper's bugloss, blue thistle.)

19—5. ELEPHANTOPUS, 49. 55.

carolinianus (elephant-foot.)

3—2. ELEUSINE, 4. 10.

indica (dog-tail grass, wire grass.)

3—2. ELYMUS, 4. 10.

villosus (wild rye, limegrass.) *canadensis*. *virginicus*. *striatus*. *hystrix*. *glaucifolius*. *philadelphicus*.

21—3. EMPETRUM, 18. 51.

nigrum (black crowberry.)

22—5. ENDOCARPON, 57. 2.

miniatus (hidden lichen.)

10—1. EPIGAEA, 18. 51.

repens (trailing arbutus. r. & w. Ap. ♄.) stem creeping: branches and petioles very hirsute: leaves cordate, entire: corol cylindric.

8—1. EPILOBIUM, 17. 88.

spicatum (willow-herb.) *lineare*. *coloratum*. *tetragonum*. *palustre*. *alpinum*.

19—1. EPIPACTIS, 7. 21.

convallaroides (lily orchis.)

22—1. EQUISETUM, 55. 5.

arvense (horsetail.) *sylvaticum*. *uliginosum*. *scirpoides*. *hyemale*, (scouring rush.)

8—1. ERICA, 18. 51.

pubescens (downy heath.) *tetralix*.

18—2. ERIGERON, 49. 55.

canadense (fleabane, pride-weed.) *hyssopifolium*. *strigosum*. *heterophyllum*. *philadelphicum*. *purpureum*. *bellidifolium*. *nervosum*.

14—2. ERINUS, 40. 35.

africanus.

20—3. ERIOCAULON, 6. 13.

pellucidum (pipewort.) *decangulare.*

3—1. ERIOPHORUM, 3. 9.

virginicum (cotton grass.) *angustifolium. polystachium. cespitosum* (Stockbridge, Mass. w. M. ♃.)

16—5. ERODIUM, 14. 73.

ciconium (stork-bill geranium.) *cicutarium* (hemlock geranium.) *moschatum* (musk geranium.)

5—2. ERYNGIUM, 45. 60.

ovalifolium (sea-holly.) *virginianum.*

15—2. ERYSIMUM, 39. 63.

officinale (hedge-mustard. y. J. ⊙.) siliques close-pressed to the rachis of the spike: leaves runcinate. *barbarea* (water radish.)

6—1. ERYTHRONIUM, 11. 14.

dens-canis (dog tooth violet, adder's tongue. y. Ap. ♃.) leaves oblong-ovate, glabrous, spotted. Scape 4 to 8 inches high.

11—3. ESULA, 38. 96.

lathyrus (spurge caper. E. J. ♂.) umbel 4-cleft, dichotomous: leaves opposite, entire, lanceolate, pointing four ways. *peplus* (wild caper.) *mercurialina. corollata.*

18—1. ETHULIA. 49. 55.

uniflora (floating daisy.)

5—1. EUONYMUS, 43. 95.

atropurpureus (spindle-tree.) *americanus* (burning bush.

18—2. EUPATORIUM, 49. 55.

1. *Calyxes not more than 5-flowered.*

hyssopifolium (hyssop-thoroughwort.) *sessilifolium. truncatum. album. lanceolatum. trifoliatum. teucrifolium. melissoides. rotundifolium. pubescens. altissimum. amoenum. ceanothifolium. gracile* (slender thoroughwort.) *laevigatum* (smooth hempweed.)

2. *Calyxes more than 5-flowered.*

purpureum (purple thoroughwort, or joe-pye. p. Au. ♃.)

leaves in fours or fives, petioled, lance-ovate, serrate, rugose-veined, roughish: stem hollow. *maculatum.* *punctatum.* *verticillatum* (joe-pye's weed. p. Au. ♃.) leaves in threes or fours, lance-ovate, wedge-form at the base, unequally serrate, somewhat glabrous: stem solid, smooth. *perfoliatum* (boneset, thoroughwort. w. Au. ♃.) leaves connate-perfoliate. *coelestinum.* *ageratoides.*

11—3. EUPHORBIA, 38. 96.

hypericifolia (spurge.) *maculata* (spotted spurge.) *dentata.* *polygonifolia.* *ipecacuanhae.* *portulacoides.*

14—2. EUPHRASIA, 40. 35.

officinalis (eyebright.)

20—13. FAGUS, 50. 99.

ferruginea (beech. y-w. J. ♄.) leaves ovate-oblong, acuminate, pubescent beneath, coarsely toothed.

3—1. FEDIA, 48. 56.

olitoria (lamb lettuce.) *radiata* (wild lamb-lettuce.)

5—2. FERULA, 45. 60.

canadensis (giant fennel.)

3—2. FESTUCA, 4. 10.

elatior (fescue-grass.) *poaeoides.* *fluitans* (water-fescue.) *nutans.* *clandestina.* *tenella.* *duriuscula.* *rubra.*

21—3. FICUS, 53. 98.

carica (fig tree.)

6—1. FLOERKEA, 15. 22.

uliginosa (false mermaid.)

20—1. FLUVIALIS, 15. 6.

fragilis (river-nymph.) *flexilis.*

22—2. FONTINALIS, 56. 4.

capillacea. *antipyretica,* stem branched, 3-sided: leaves lanceolate, acute, keel-form, nerveless, 3-rowed; sheath-leaves obtuse: lid awlform.

28—5. FOTHERGILLA, 50. 99.

alnifolia (fothergill's bush.)

12—13. FRAGARIA, 35. 92.

vesca (English strawberry. E. w. M. ♃.) calyx of the fruit reflexed : hairs on the petioles spreading, on the peduncles close-pressed. *elatior* (hautboy-strawberry. E. w. ♃.) calyx of the fruit reflexed : hairs on the peduncle and petiole spreading. *grandiflora* (pineapple-strawberry.) *virginiana* (wild-strawberry. w. M. ♃.) calyx of the fruit spreading : hairs on the petioles erect, on the peduncles close-pressed : leaves somewhat glabrous above. *canadensis* (mountain-strawberry.)

4—1. FRASERA.

caroliniensis (pyramid flower.)

21—2. FRAXINUS, 44. 37.

acuminata (white ash. w-g. M. ♄.) leafets petioled, oblong, shining, acuminate, very entire, glaucous beneath : flowers calycled. *juglandifolia* (walnut-leaf-ash, swamp ash.) *pubescens* (black ash, red ash.) *sambucifolia* (water ash.) *epiptera.*

6—1. FRITILLARIA, 10. 14.

imperialis (crown imperial. E. r. & y. M. ♃.) flowers under a leafy crown, nodding : leaves lance-linear, entire. *maleagris* (fritillary, guinea-hen flower.)

22—4. FUCUS, 57. 2.

natans (floating seaweed) filiform compressed, pinnate : leaves oblong-lanceolate, serrate : vesicles globular, peduncled, scattered, on flat dilated peduncles. *vesiculosus* (bubble-seaweed) linear forked, entire ; with globular, innate and axillary vesicles, cloven at the tips ; barren ones flat, fertile ones tumid. *edulis* (worm seaweed.) *nodosus* (notty seaweed) somewhat forked : leaves 2-rowed, peduncled, roundish, entire, fertile : vesicles innate, solitary, broader than the frond. *spiralis. purpurascens.*

8. 1. FUCHSIA.

marylandica (ear drop.)

13—1 FUIRENA, 3. 9.

squamosa (umbrella grass.)

22. 6. FULIGO, 58. 1.

septica (soot fungus,) *capitata.*

17—6. FUMARIA, 24. 62.

officinalis (fumitory.)

22—2. FUNARIA, 56. 4.

hygrometica (hygrometer moss.) leaves ovate, acute, concave, entire, inflected : capsules swelling, drooping. *flavicans. muhlenbergii.*

17—10. GALACTIA, 32. 93.

glabella (milk-way plant.) *mollis.*

6—1. GALANTHUS, 6. 17.

nivalis (snow-drop E. w. Ap. ♃.) leaves linear, keeled, acute, radical : scape 1-flowered.

17—10. GALEGA, 32. 93.

virginiana (goat's rue. r. J. ♃.) erect, having whitish down : leafets (17 to 21) oval-oblong.

14—1. GALEOPSIS, 42. 39.

tetrahit (flowering-nettle. r. & w. Ju. ⊙.) calyx prickly, a little shorter than the corol : stem rough-haired.

4—1 GALIUM, 47. 57.

1. *Fruit glabrous.*

trifidum (bedstraw.) *tinctorium* (dyer's cleavers.) *asprellum* (rough bedstraw.

2. *Fruit hirsute.*

brachiatum. boreale. bermudianum. micranthum. circaezans (wild liquorice.) *triflorum. aparine. pilosum. strictum.*

10—1. GAULTHERIA, 18. 51.

procumbens (spicy wintergreen. w. J. ♃. or ♄.) stem procumbent ; branches erect : leaves obovate, acute at the base : flowers few, nodding. *hispidula* (creeping wintergreen.)

8—1. GAURA, 17. 88.

biennis (virginian loosestrife.)

17.—10. GENISTA, 32. 93.

tinctoria (dyer's broom.)

5—2. GENTIANA, 20. 40.

lutea (yellow gentian.) *pneumonanthe* (calathian violet.) *saponaria* (soap-gentian. b. & w. S. ♃.) stem terete, glabrous: leaves lance-oblong 5-nerved: flowers sessile, fascicled, terminal and axillary. *ochroleuca*. *linearis*. *quinqueflora*. *angustifolia*. *crinita* (fringed gentian.)

16—10. GERANIUM, 14. 73.

sanguineum (bloody geranium.) *maculatum* (crowfoot geranium.) r. & b. J. ♃.) erect: pubesence reversed: stem dichotomous: leaves opposite, 3 or 5-parted, upper ones sessile: peduncles 2-flowered: petals obovate. *columbinum*. *pusillum*. *robertianum* (herbrobert. r. J. ♂.) spread, hirsute: leaves opposite, ternate and quinate, 3-cleft-pinnatifid. *dissectum*.

14—2. GERARDIA, 40. 40.

flava (false foxglove. y. Ju. ♃.) pubescent: stem simple: leaves subsessile, lanceolate, entire or toothed; lower ones subpinnatifid, gashed: flowers axillary, opposite, subsessile, 2 or 3 feet high. *glauca* (oak-leaf foxglove.) *pedicularia* (lousewort foxglove.) *purpurea*. *crinita*. *auriculata*. *tenuifolia*. *setacea*.

12—13. GEUM, 35. 92.

virginianum (avens.) *strictum* (upright avens.) *agrimonoides*. *geniculatum*. *rivale* (purple avens. p. M. ♃.) pubescent: stem simple: radical leaves interruptedly pinnate; cauline ones 3-cleft: flowers nodding; petals of the length of the calyx: awns plumose, nakedish above, a little hooked. *album*. *peckii*.

5—1. GLAUX, 17. 91.

maritima (sea milkwort.)

14—1. GLECHOMA, 42. 39.

hederacea (ground ivy. gill overground. b. & r. M. ♃.) leaves reniform, crenate: stem rooting. *cordata*.

21—13. GLEDITSCHIA, 33. 93.

triacantha (honey-locust.)

17—10. GLYCINE, 32. 93.

monoica (wild bean.) *angulosa*. *comosa* (slender beanvine.) *apios* (ground-nut. b. & p. Au. ♃.) twining, glabrous: root tuberous: leaves unequally pinnate.

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17—10. GLYCIRRHIZA, 32. 93.

officinalis (liquorice.)

18—2. GNAPHALIUM, 49. 55.

margaritaceum (large-flowered life-everlasting. *polycephalum* (sweet-scented life-everlasting. *luteo-album*. *plantagineum* (early life-everlasting.) *dioicum* (mousear.) *purpureum*. *americanum*. *uliginosum* (mud life-everlasting.) *germanicum*. *sylvaticum*.

5—1. GOMPHRENA, 54. 30.

globosa (globe amaranth, bachelor's button.)

16—13. GORDONIA. 37. 74.

lasianthus (lolly bay.)

16—13. GOSSYPIUM, 37. 74.

herbaceum (cotton.)

2—1. GRATIOLA, 40. 40.

officinalis (hedge hyssop. y. J. ♃.) leaves broad-linear, sessile, entire, 3-nerved, punctate above. *virginica* (creeping hedge-hyssop.) *acuminata*. *pubescens*.

22—2. GRIMMIA, 56. 4.

controversa (awl-cap moss.) *alpicola*.

22—2. GYMNOSTOMUM, 56. 2.

pyriforme (toothless moss.) *prorepens*. *filiforme*.

22—5. GYROPHORA, 57. 2.

vellea (morocco leather.) *papulosa* (shoe leather.) *pellita*, a leathery membrane, smooth and copper-brown above, black and hairy beneath.

4—2. HAMAMELIS, 54. 78.

virginica (witch-hazel. y. Oc. ♄.) leaves obovate, acute, toothed, cordate with a small sinus. Flowers in the fall and perfects the fruit the next summer.

21—5. HAMILTONIA.

oleifera (oil nut.)

14—1. HEDEOMA, 42. 39.

pulegioides (penny-royal. b. J. ⊙.) pubescent: leaves oblong, serrate : peduncles axillary, whorled : lower lip of the calyx with 2 ciliate bristles. 5 or 6 inches high. *glabra.*

5—1. HEDERA, 46. 58.

helix (english ivy.)

17—10. HEDYSARUM, 32. 93.

canadense (bush trefoil r. Ju. ♃.) erect, smoothish : leaves ternate, lance-oblong : stipules filiform : flowers racemed : joints of the loment obtusely-triangled, hispid. *canescens. marilandicum. obtusum. viridiflorum. glabellum. ciliare. paniculatum. rotundifolium. bracteosum. cuspidatum. glutinosum. nudiflorum. acuminatum. repens. prostratum. strictum.*

18—2. HELENIUM, 49. 55.

autumnale (false sunflower. y. Oc. ♃.) leaves lanceolate, serrate, subdecurrent.

18—3. HELIANTHUS, 49. 55.

annuus (common sunflower.) *pubescens. atrorubens. trachelifolius. divaricatus. frondosus. multiflorus. macrophyllus. tuberosus* (jerusalem artichoke. E. y. S. ♃.) leaves 3-nerved, scabrous, lower ones heart-ovate, upper ones ovate, acuminate ; petioles ciliate. Root tuberous. *strumosus. altissimus. giganteus. decapetalus. mollis. angustifolius.*

18—2. HELIOPSIS, 49. 55.

laevis (ox-eye.)

5—1. HELIOTROPIUM, 41. 42.

indicum (turnsole.)

13—13. HELLEBORUS, 26. 61.

foetidus (hellebore.)

6—3. HELONIAS, 10. 13.

latifolia (helonias.) *erythrosperma. dioica.*

22—6. HELVELLA, 58. 1.

fuliginosa (smoky fungus.) *mitra.*

6—1. HEMEROCALLIS, 10. 17.

flava (yellow day-lily. E. y. Ju. ♃.) leaves broad-linear, keeled : petals flat, acute ; nerves of the petals undivided. *fulva* (tawny day-lily. E. y. Ju. ♃.) nerves of the outer petals branching.

13—13. HEPATICA, 26. 61.

triloba (liverleaf. w. & b. Ap. ♃.) leaves 3-lobed, entire, obtuse : calyx leaves broad-ovate, obtuse. Var. *acuta*, leaves 3 to 5-lobed, acute : calyx leaves acute.

5—2. HERACLEUM, 45. 60.

lanatum (w. Ju. ♃.) petioles and nerves of the leaves very villose beneath : leafets petioled, broad, round-cordate, subpalmate-lobed : seed orbicular.

15—2. HESPERIS, 39. 63.

tristis (yellow rocket.) *matronalis* (garden rocket, dame violet. E. ♃.) stem simple, erect : leaves lance-ovate, denticulate : petals emarginate, mucronate. Var. *hortensis*, flowers double, odoriferous, white. *pinnatifida* (wild rocket.)

3—1. HETERANTHERA, 6. 13.

reniformis, (odd-shives.)

5—2. HEUCHERA, 13. 84.

viscida (allum root.) *pubescens*.

16—13. HIBISCUS, 37. 74.

moscheutus (marsh mallow.) *palustris* (marsh hibiscus.) *riparius*. *syriacus* (syrian mallow. E. w. & p. Au. ♄.) leaves wedge-ovate, 3-lobed, toothed : outer calyx about 8-leaved, of the length of the inner : stem woody. *esculentus* (okra.) *virginicus* (sweet weed.) *trionum* (bladder ketmia, flower of an hour. E. ⊙.) outer calyx many-leaved, inner one inflated.

18—1. HIERACIUM, 49. 53.

aurantiacum (orange hawkweed.) *venosum* (vein-leaf hawkweed. y. Ju. ♃.) scape naked, corymb-panicled, glabrous ; pedicels filiform : leaves lance-obovate with thin hairs above and naked beneath, margin ciliate, glandular-toothed, veins coloured : calyx glabrous. *gronovii*. *paniculatum*. *marianum*. *kalmii*. *virgatum*. *scabrum*.

21—4. HIPPOPHAE, 16. 24.

canadensis (sea buckthorn.)

1—1. HIPPURIS, 15. 6.

vulgaris (mares tail.)

3—2. HOLCUS, 4. 10.

lanatus (soft grass.) *odoratus*. *monticola*.

3—3. HOLOSTEUM, 22. 82.

succulentum (succulent chickweed.)

3—2. HORDEUM, 4. 10.

vulgare (barley. E. Ju. ⊙.) florets all perfect, awned: in two erect rows. *jubatum*.

10—3. HORTENSIA, 13. 85.

speciosa (changeable hydrangea, r. & w. J. ♄.) leaves broadly ovate, serrate, accuminate: flowers corymbed. From the East Indies. This is the common flower-pot shrub, asually called hyderindia.

5—1. HOTONIA, 21. 34.

palustris (water violet.)

4—1. HOUSTONIA, 47. 57.

coerulea (Venus' pride. b. & w. M. ♃.) stem erect, setaceous, dichotomous: radical leaves spatulate; cauline ones oblanceolate, opposite: peduncles 1-flowered elongated. *purpurea*. *longifolia*.

11—1. HUDSONIA, 18. 51.

ericoides (false heath.)

21—5. HUMULUS, 53. 98.

lupulus (hop. g-y. Au. ♃.) stem twining with the sun: leaves lobed.

6—1. HYACINTHUS, 10. 16.

orientalis (garden hyacinth. E. r. Ap. ♃.) corol funnel-form, half-6-cleft, ventricose at the base. *muscari* (musk hyacinth. E. b. Ap. ♃.) corols ovate, all equal. *botryoides* (grape hyacinth.) *comosus* (purple-grape hyacinth.)

22—6. HYDNUM, 58. 1.

imbricatum (prickly fungus) on a stem, imbricate, convex, red-brown with darker scales: stem pale-brown or brownish-white. *coralloides*. *chrysorhizum* (paper punk.) *gelatinosum*.

10—2. HYDRANGEA, 13. 35.

vulgaris (hydrangea.) *nivea.*

13—13. HYDRASTIS, 26. 61.

canadensis (orange root.)

5—2. HYDROCOTYLE, 45. 60.

umbellata (water navelwort.) *americana.* *vulgaris* *bipinnata* (bulbous pennywort.)

13—13. HYDROPELTIS, 26. 61.

purpurea (water shields. p. Au. ♃.) leaves peltate, oval, entire.

5—1. HYDROPHYLLUM, 41. 42.

appendiculatum (waterleaf.) *virginicum* (burr-flower. b. J. ♃.) glabrous : leaves pinnate and pinnatifid. *canadense.*

5—1. HYOSCYAMUS, 28. 41.

niger (henbane. E. Ju. ♂.) leaves clasping sinuate : flowers veiny, sessile.

18—1. HYOSERIS, 49. 53.

amplexicaulis.

13—5. HYPERICUM, 20. 68.

1. *Flowers with 5 styles.*

ascyroides (St. John's wort.) *pyramidatum.* *elatum.* *prolificum.*

2. *Flowers with 3 styles.*

angulosum. *canadense* (Ju. ⊙.) erect, small flowers : stem 4-sided, dichotomous above. *virginicum.* *parviflorum.* (false century.) *corymbosum.* *perforatum* (y. J. ♃.) erect, branching : stem 2-edged : leaves oblong, obtuse, transparently punctate.

22—2. HYPNUM, 56. 4.

denticulatum (sleeping moss,) leaves ovate, pointed, nerveless, entire, close : capsule oblong, lid conic. *setaceumen.* *triquetrum.* *serpens.* *illecebrum.* *cuspidatum.* *stellatum.* *squarrosum.* *cupressiforme.* *compressiforme.* *molluscum.*

6—1. HYPOXIS, 10. 17.

erecta (star-grass. y. Ju. ♃.) pilose : scape 2 or 3-flowered : leaves lance-linear. *graminea.*

14—1. HYSSOPUS, 42. 39.

officinalis (hyssop. E. Ju. ♃.) flowers whorled, racemes one-way : leaves lance-linear. *nepetoides* (giant hyssop. *scrophularifolius.*

15—1. IBERIS, 39. 68.

umbellata (candy tuft.)

4—4. ILEX, 43. 95.

canadensis (mountain holly. g-y. M. ♄.) leaves ovate, entire or a little serrate at the apex, glabrous. *opaca* (evergreen holly.) *laxiflora.*

5—1. ILLECEBRUM.

capitatum (head knotgrass.)

5—1. IMPATIENS, 24. 73.

balsamina (balsam weed. E. y. Au. ⊙.) peduncles 1-flowered : leaves lanceolate. *nolitangere* (jewel-weed, touch-me-not. y. Ju. ⊙.) peduncles many flowered, leaves ovate. *biflora* (speckeled jewels.)

5—2. IMPERATORIA, 45. 60.

ostruthium (masterwort.)

17—10. INDIGOFERA, 32. 93.

tinctoria (indigo.)

18—2. INULA, 49. 55.

helenium (elecampane. y. Au. ♃.) leaves clasping, ovate, rugose, tomentose beneath : scales of the calyx ovate. *falcata. mariana. argentea.*

5—1. IPOMAEA, 29. 43.

quamoclit (jasmine bindweed.) *coccinea. lacunosa. bona-nox. nil* (morning-glory. b. Ju. ⊙.) hirsute : leaves ventricose 3-lobed : peduncles short, 1 or 2-flowered : bracts subulate : calyx very villose, long-acuminate. *purpurea.*

3—1. IRIS, 6. 18.

pumila (dwarf flower-de-luce. E. b. M. ♃.) bearded :

scape 1-flowered : leaves ensiform, glabrous : tube of the corol exsert : petals oblong obtuse. *prismatica*. *plicata* (garden iris.) *cristata* (ladies' flag.) *virginica* (wild flag, wild iris.) *gracilis* (Boston iris.) *ochroleuca* (yellow iris.) *verna*. *versicolor*.

14—1. ISANTHUS, 42. 39.

coeruleus (blue gentian. b. Ju. ☉.) viscid-hairy : leaves lance-oval.

15—1. ISATIS, 39. 63.

tinctoria (woad.)

22—5. ISIDIUM, 57. 2.

dactylinus (corol lichen.) *coralloides*.

4—1. ISNARDIA, 17. 91.

palustris (water purslane. g. J. ♃.) leaves ovate, entire : flowers auxillary.

5—1. ITEA, 18. 50.

virginica.

18—4. IVA, 49. 55.

frutescens (hig-water shrub.)

3—3. IXIA, 6. 18.

chinensis.

2—1. JASMINUM, 44. 37.

fruticans (jasmine.) *officinale*.

8—1. JEFFERSONIA.

diphylla (twin leaf.)

20—13. JUGLANS, 50. 94.

regia (madeira nut.) *nigra* (black walnut.) *cinerea* (butternut, M. ♄.) leafets numerous, lanceolate, serrate, rounded at the base, soft pubescence beneath. *sulcata*. *squarrosa* (shag-walnut, shag-hickory.) *tomentosa* (white-heart hickory.) *amara* (bitter nut.) *porcina* (pig-nut.)

6—1. JUNCUS, 5. 13.

effusus (rush grass.) *acutus*. *setaceus*. *squarrosus*. *marginatus*. *nodosus*. *polycephalus*. *sylvaticus*. *fluitans* (floating reed-grass.) *acuminatus*. *bulbosus*. *tenuis*. *bufonius*. *spicatus*. *pilosus*. *campestris*. *melanocarpus*.

22—3. JUNGERMANNIA, 57. 3.

bidentata. furcata. tridenticulata. platyphylla. nemorosa. dilatata. orbicularis. complanata. tamariscifolia. tomentella. pusilla. epiphylla, leafet on the frond. *pinguis.*

21—16. JUNIPERUS, 51. 100.

sabina (savin.) *prostrata* (american savin.) *virginiana* (red cedar.) *communis* (juniper.)

2—1. JUSTICIA, 40. 36.

adhatoda (malabar nut.)

10—1. KALMIA, 18. 50.

latifolia (laurel. r. Ju. ♄.) leaves long-petioled, scattered and in threes, oval, smooth both sides: corymbs terminal, with viscid hairs. *angustifolia* (sheep laurel.) *glauca* (swamp laurel.)

18—1. KRIGIA, 49. 53.

virginica (dwarf-dandelion. y. M. ☉.) small: leaves lyrate, glaucous, smoothish, ciliate: scape 1-flowered, twice as long as the leaves.

18—1. KUHNIA, 49. 55.

eupatorioides (false boneset.) *critonia.*

3—1. KYLLINGIA, 3. 9.

monocephala (false bog-rush.)

18—1. LACTUCA, 49. 63.

sativa (lettuce. E. y. Ju. ☉.) leaves roundish; cauline ones cordate: stem corymbed. Var. *romana* has oblong strait leaves, narrowed at the base Var. *crispa* has sinuate-crenate leaves, toothed, undulated, crisped; radical ones hairy on the keel. Var. *laciniata* has the lower leaves pinnatifid and the upper ones runcinate. *elongata* (wild lettuce.)

14—1. LAMIUM, 42. 39.

garganicum (dead nettle.) *purpureum. amplexicaule* (henbit, dead-nettle. p. M. ☉.) floral leaves sessile, clasping, gashed: radical leaves lobed.

21—6. LAPATHUM, 12. 28.

acetosellum (field sorrel. g. & p. M. ♃.) leaves lance-hastate, auricled, entire. *acetosum* (garden sorrel.)

17—10. LATHYRUS, 32. 93.

stapulaceus (wild vetchling.) *palustris*. *myrtifolius*. *venosus*. *odoratus* (sweet pea. E. J. ☉.) peduncles 2-flowered: tendril with 2 ovate-oblong leafets: legumes hirsute. *cicera* (E. p. Ju.) *latifolius* (everlasting-pea.) *clymenum* (various pea.) *articulatus* (jointed pea.) *sativus* (chick-vetch.)

9—1. LAURUS, 12. 27.

camphoratus (camphor-tree.) *benzoin* (spice-bush, fever-bush.) *sassafras* (sassafras tree. y. M. ♄.) leaves entire and lobed on the same plant.

14—1. LAVANDULA, 42. 39.

spica (lavender. E. Au. ♃.) leaves sessile, lance-linear, with revolute margins: spike interruptedly naked. *carnosa* (E. Ju. w. ♃.)

16—13. LAVATERA, 37. 74.

thuringiaca (gay mallows, E. ♃.) lower leaves angled; upper ones 3-lobed, with the middle one longest. *arborea* (tree mallows.)

3—3. LECHEA, 22. 82.

major (pin-weed.) *minor*. *racemulosa*. *incana*. *muscorum*. *immersa*. *sabulaetorum*. *alba*. *icmadophilus*. *pensylvanicus*.

10—1. LEDUM, 18. 50.

palustre (marsh-tea.) *latifolium* (labrador-tea.)

3—2. LEERSIA, 4. 10.

lenticularis (white grass.) *virginica* (cut grass.)

10—1. LEIOPHYLLUM, 18. 50.

thymifolium (sleek-leaf.)

20—2. LEMNA, 54. 6.

trisulca (duck meat.) *minor* (green duck meat.) *polyrhiza* (water flaxseed.)

18—1. LEONTODON, 49. 53.

taraxacum (dandelion. y. Ap. ♃.) outer calyx reflexed:

scape 1-flowered: leaves runcinate, with toothed divisions.

14—1. LEONURUS, 42. 39.

cardiaca (motherwort. w-r. Ju. ♃.) leaves 3-lobed, toothed, bases wedge-form: calyx prickly, less than the corol.

15—1. LEPIDIUM, 39. 63.

sativum (peppergrass.) *virginicum* (wild peppergrass.)

22—5. LEPRARIA, 57. 2.

incana. botryoides. flava.

3—1. LEPTANTHUS, 6. 13.

graminea (floating grass-weed.)

22—2. LESKEA, 56. 4.

squarrosa. attenuata. rostrata.

17—10. LESPEDEZA, 32. 93.

sessiliflora (bush clover.) *violacea. procumbens. capitata. polystachia.*

18—1. LIATRIS. 49. 54.

spicata (gay feather.) *scariosa. squarrosa. pilosa. aspera.*

5—2. LIGUSTICUM, 45. 60.

levisticum (lovage, smellage. E. w. ♃.) leaves long, numerous; leafets above gashed. Strong scented.

2—1. LIGUSTRUM, 44. 37.

vulgare (prim.)

6—1. LILIUM, 10. 14.

candidum (white lily.) *catesbaei. superbum* (superb lily.) *canadense* (nodding lily.) *philadelphicum* (red lily. r. y. J. ♃.) leaves whorled, lance-linear: stem about 2-flowered: corol erect, bellform, spreading. *pennsylvanicum. bulbiferum* (E. Ju. y. r. ♃)

3—1. LIMNETIS, 3. 9.

juncea (rush salt grass.) *polystachia* (many-spiked saltgrass.) *glabra,*

19—1. LIMODORUM, 7. 21.

unifolium (limodore.)

15—2. LIMOSELLA, 40. 40.

subulata (mudwort.)

2—1. LINDERNIA, 40.

attenuata (lindern.) *dilatata.*

4—1. LINNAEA, 48. 58.

borealis (twin-flower. w-r. J. ♃.) stem prostrate: branches erect, each bearing 2 flowers: leaves roundish, crenate forward.

5—5. LINUM, 14. 73.

usitatissimum (flax. E. b. Ju. ⊙.) leafets of the calyx ovate, acute, 3-nerved: petals crenate: leaves lanceolate. *virginianum* (wild flax.) *perenne* (garden flax.)

20—13. LIQUIDAMBAR, 51. 99.

styraciflua (sweet gum.)

13—13. LIRIODENDRON, 52. 75.

tulipifera (white wood, tulip tree. y. r. J. ♄.) leaves truncate at the end, with 2 side lobes.

5—1. LITHOSPERMUM, 41. 42.

officinale (stone seed, gromwell.) *latifolium.* *arvense* (steen-prout, wheat-thief. w. M. ⊙.) seed rugose: corol scarcely longer than the calyx: leaves obtuse, veinless.

5—1. LOBELIA, 29. 52.

cardinalis (cardinal flower.) *kalmii.* *pallida.* *dortmannia.* *siphilitica.* *inflata* (wild tobacco. b. Ju. ⊙.) erect, branching, very hirsute: leaves ovate, serrate: racemes leafy: capsules inflated. *puberula.* *claytoniana.*

3—2. LOLIUM, 4. 10.

perenne (darnel grass.) *tumulentum.*

5—1. LONICERA, 48. 58.

caprifolium (honeysuckle. E. ♄.) corols ringent-like, terminal, sessile: leaves connate-perfoliate at the top. *periclymenum* (woodbine.) *fraseri.* *grata.* *parviflora.* *sempervirens.* *hirsuta* (rough woodbine.)

4—1. LUDWIGIA, 17. 88.

alternifolia (seed-box.) *pilosa.*

15—1. LUNARIA, 89. 63.

annua (honesty.) *rediviva* (satin flower.)

17—10. LUPINUS, 32. 93.

perennis (wild lupine. b. M. ♃.) stem and leaves smoothish: leaves digitate with about 8 or 10 leafets, which are oblanceolate, obtusish: calyxes alternate not appendaged. *hirsutus* (garden lupine.) *pilosus* (rose lupine.) *luteus* (yellow lupine.) *villosus* (hairy lupine.) *albus* (white lupine.)

10—5. LYCHNIS, 22. 82.

chalcedonica (scarlet lichnis.) *viscaria* (clammy lichnis.) *flos-cuculi* (ragged robin.)

5 or 4—1. LYCIUM, 28. 41.

barbarum (matrimony. E. r. J. y. ♄.) stem angled; branches erect: leaves lanceolate, tapering to both ends. *caroliniana* (samphire buckthorn.)

22—6. LYCOPERDON, 58. 1.

bovista (common puff-ball. O.) at first white, becoming black and spherical: outer coat downy, which pealing off leaves the leathery inner coat: seeds black, lighter than air, and appearing like smoke. *stellatum* (starpuff-ball) wrapper many-cleft, spread, stellate: head smooth with somewhat pointed mouth at the top. *pyriforme*. *pratense*.

22—1. LYCOPODIUM, 55. 5.

clavatum (festoon pine.) *complanatum* (ground pine.) *dendroideum* (tree-weed.) *annotinum*. *inundatum*. *alopecuroides*. *selaginoides*. *rupestre* (dwarf festoon pine.) *albidulum*. *apodum*. *lucidulum* (moon-fruit pine.)

2—1. LYCOPUS, 42. 39.

europaeus (water-horehound.) *virginicus*[*] (bugle. w. J. ♃.) leaves broad-lanceolate, serrate, at the base narrowed and entire: calyx very short, spineless. Var. *quercifolius*, leaves sinuate-pinnatifid. *uniflorus*.

22—1. LYGODIUM, 55. 5.

palmatum (climbing fern.)

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[*] A writer in a New-Haven paper recommends this plant as an infallible cure for bleeding at the lungs.

5—1. LYSIMACHIA, 20. 34.

angustifolia (loosestrife.) *racemosa*. *capitata*. *quadrifolia*. *ciliata*. *hybrida*.

11—1. LYTHRUM, 17. 91.

salicaria (milk-willowherb.) *verticillatum* (swamp-willowherb. p. Au. ♃.) pubescent: leaves opposite, or in threes, lanceolate, petioled.

13—13. MAGNOLIA, 52. 75.

glauca (beaver tree.) *acuminata* (cucumber tree.) *tripetala* (umbrella tree.) *grandiflora* (big laurel, magnolia.

9—1. MALAXIS, 7. 21.

ophioglossoides (adder mouth.) *liliifolia* (twayblade. w. y. p. J. ♃.) leaves 2, lance-ovate or oval; scape 3-cornered: inner petals filiform, reflexed, two coloured; lip concave, obovate, mucronate.

16—13. MALVA, 37. 74.

americana (rough mallows.) *caroliniana* (creeping mallows.) *rotundifolia* (low mallows. r. w. J. ♃.) leaves heart-orbicular, obsoletely 5-lobed, peduncles bearing the fruit declined: stem prostrate. *sylvestris* (mallows.) *crispa* (curled mallows.) *moschata* (musk mallows.)

22—2. MARCHANTIA, 57. 3.

polymorpha (brook-liverwort. g-y. Ju. ♃.) leaves obtusely lobed: the calyx (or umbrella under which the flowers are placed) is about 10-cleft. *hemispherica*, calyx hemispheric, 5-cleft: stalk or stipe naked at the base. *cruciata*. *cornica*. *tenella*.

13—1. MARISCUS, 3. 9.

echinatus hedgehog clubrush.)

14—1. MARRUBIUM, 42. 39.

vulgare (motherwort. w. Ju. ♃.) leaves round ovate, toothed, rugose-veined: calyx toothed, setaceous, uncinate.

14—2. MARTYNIA, 40. 42.

proboscidea (unicorn plant.

22—2. **MASCHALOCARPUS**, 56. 4.

julaceum (creeping moss.) *marginatum*.

18—2. **MATRICARIA**, 49. 55.

chamomilla (wild chamomile.)

6—3. **MEDEOLA**, 11. 12.

virginica. (indian cucumber. y. g. M. ♃.) leaves whorled near the middle of the stem, and 3 together at the top, lance-oval.

17—10. **MEDICAGO**, 32. 93.

sativa (lucerne medick.) *lupulina* (clover medick. y. J. ☉.) spikes oval : legumes reniform, 1-seeded : stipules entire : leaves obovate : stem procumbent. *tribuloides* (hedge-hog.) *scutellata* (snail-shell, bee-hive, E. Ju. ☉.) peduncles about 2-flowered : legumes unarmed, coiled in an orbicular form. *maculata*.

22—2. **MEESIA**, 56. 4.

longiseta (net-tooth moss.)

14—2. **MELAMPYRUM**, 40. 35.

americanum (cow-wheat.) *latifolium*.

6—3. **MELANTHIUM**. 10. 13.

virginicum (black flower.) *racemosum* (bunch flower.)

10—1. **MELASTOMA**.

prasina.

10—1. **MELIA**.

azedarach (bead tree.) *triflora*.

3—1. **MELICA**, 4. 10.

speciosa (melic grass.)

17—10. **MELILOTUS**, 32. 93.

officinalis (melilot. w. J. ☉. or ♂.) stem erect : leaves obovate, serrate : spikes axillary panicled.

14—1. **MELISSA**, 42. 39.

officinalis (balm. E. w. b. Ju. ♃.) flowers whorled half way around, subsessile : bracts oblong, pedicelled : leaves ovate, acute, serrate. *nepeta* (calamint.)

20—16. **MELOTHRIA**, 34. 97.

pendula (creeping cucumber. y. J. ☉.) leaves subreniform, lobe-angled; terminal lobe equalling the rest: berry cylindric, ovate.

21—13. MENISPERMUM, 11. 77.

canadense (moonseed. w-y. Ju. ♄.) stem climbing: leaves subcordate, round-angled, peltate, with the petiole near the base. *virginicum.*

14—1. MENTHA, 42. 39.

viridis (spear mint. w. J. ♃.) spikes oblong interrupted: leaves lanceolate, naked, serrate, sessile: stamens longer than the corol *piperita* (peppermint.) *gracilis* (slender mint.) *borealis* (northern mint.) *canadensis.*

5—1. MENYANTHES, 21. 34.

trifoliata (buck-bean.)

8—1. MENZIESIA.

coerulea (mountain heath.) *globularis.*

22—6. MERULIUS, 58. 1.

cornucopioides (veined toadstool.) *infundibiliformis. cantharellus,* yellow, becoming hollow, with an irregular, curled margin: veins decurrent: stem solid.

12—5. MESEMBRYANTHEMUM, 13. 87.

crystallinum (ice plant.)

12—5. MESPILUS. 36. 92.

germanica (medlar.) *pyracantha* (evergreen thorn.

18—1. MIKANIA, 49. 55.

scandens (climbing thoroughwort. *melissaefolia.*

3—2. MILIUM, 4. 10.

nigricans (african millet.) *effusum* (common millet.) *ciliatum* (millet grass.)

16—10. MIMOSA, 33, 93.

sensitiva (sensitive plant.)

14—2. MIMULUS, 40. 45.

ringens (monkey flower. b. Ju. ♃.) leaves sessile, lanceolate. *alatus* (b. Ju. ♃.) leaves petioled, ovate.

5—1. MIRABILIS, 54. 32.

jalapa (four o'clock. E. r. y. Ju. ♃.) flowers heaped, peduncled: leaves glabrous.

4—1. MITCHELLA, 48. 57.

repens (partridge berry, checker berry. w. J.) stem creeping: leaves roundish.

10—2. MITELLA, 13. 84.

diphylla (currant-leaf. w. Ap. ♃.) leaves cordate, subtrilobate, dentate: scape 2-leaved. *prostrata. reniformis. cordifolia.*

22—2. MNIUM, 56. 4.

ventricosum (pricked-tooth moss.) *cuspidatum. punctatum. roseum. pyriforme.*

3—3. MOLLUGO, 22. 82.

verticillata (carpet weed. w. Ju. ⊙.) stem subdivided prostrate: leaves in whorls, wedge-form.

14—1. MOLUCELLA.

laevis (molucca balm, shell-flower.)

20—16. MOMORDICA, 34. 97.

balsamina (balsam apple.) *echinata* (w. Au. ⊙.) pomaceous, fruit 4-seeded, roundish: setose-echinate.

2—1. MONARDA, 42. 39.

didyma (mountain mint. r. J. ♃.) somewhat glabrous: heads large, proliferous: outer bracts coloured, large. *kalmiana* (oswego tea.) *clinopodia. ciliata. oblongata fistulosa. rugosa. punctata. pilosa.*

22—6. MONILA, 58. 1.

caespitosa (bead fungus.) *fructigena.*

10—1. MONOTROPA.

hypopithys (yellow beech-drops.) *lanuginosa* (bird's nest.) *uniflora* (beech drops.) *procera.*

22—6. MORELLUS, 58. 1.

impudicus (morel.) *esculentus* (eatable morel.)

20—4. MORUS, 53. 98.

alba (white mulberry. E. M. ♄.) leaves heartform with oblique base. *nigra* (black mulberry.) *rubra.*

22—6. MUCOR, 58. 1.

mucedo (common mold,) aggregated : head spherical, on a long stem ; bursting when brought from a damp place into the sun's rays. *herbariorum.*

3—2. MUHLENBERGIA, 4. 10.

diffusa (dropseed-grass.) *erecta* (wood dropseed-grass. Ju. ♃.) culm strong, simple ; culm and leaves pubescent.)

15—1. MYAGRUM, 39. 63.

perfoliatum (gold of pleasure.)

5—1. MYOSOTIS, 41. 42.

scorpioides (scorpion weed.) *virginiana. arvensis. lappula.*

21—4. MYRICA, 50. 99.

gale (sweet gale. M. ♄.) leaves wedge-lanceolate, obtuse, serrate at the apex. *cerifera* (bayberry. g-p. M. ♄.) leaves wedge-lanceolate, acute. *caroliniensis. pensylvanica.*

20—13. MYRIOPHYLLUM, 15. 6.

verticillatum (water milfoil.) *spicatum.*

5—2. MYRRHIS, 45. 60.

dulcis (sweet cicily. w. J. ♃.) leaves compound, hairy ; leafets pinnatifid-lobed.

12—1. MYRTUS, 19. 89.

communis (myrtle. E. w. Ju. ♄.) flowers solitary : involucre 2-leaved : leaves ovate.

20—1. NAJAS, 15. 6.

canadensis (water-nymph.)

16—13. NAPAEA, 37. 74.

laevis (false mallows.) *scabra.*

6—1. NARCISSUS, 9. 17.

pseudo-narcissus (daffodil. E. M. ♃.) spathe 1-flowered: nectary bellform. *tazetta* (polyanthos.) *jonquilla* (jonquil.) *poeticus* (poet's narcissus.)

6—1. NARTHECIUM, 10. 16.

americanum (false asphodel.)

22—2. NECKERA, 56. 4.

pennata (strait-haired moss.) *heteromalla.*

13—13. NELUMBIUM, 26. 61.

luteum (nelumbo.)

19—1. NEOTTIA, 7. 21.

aestivalis (summer ladies' tresses. w. J.) stem leafy: roots bulbs oblong, aggregate. *tortilis* (twisted tresses.) *cernua* (nodding ladies' tresses.) *pubescens* (blood-vein ladies' tresses, rattle snake violet. y-w. Ju. ♃.) radical leaves ovate, petioled, having coloured reticulate veins.

14—1. NEPETA, 42. 39.

cataria (catmint, catnep. b-w. Ju. ♃.) flowers in whorled spikes: leaves petioled, cordate.

5—2. NERIUM.

oleander (rose bay, oleander.)

5—1. NICOTIANA, 28. 41.

tabacum (virginian tobacco. E. w-r. Ju. ⊙.) leaves lance-ovate, sessile, decurrent: flowers acute. *rustica* (common tobacco. E. Au. ⊙.) flowers obtuse. *paniculata* (small-flowered tobacco.)

13—5. NIGELLA, 26. 61.

damascena (fennel-flower. E. M. ⊙.) flower surrounded with a leafy involucre. *sativa.*

5—1. NOLANA, 41. 42.

prostrata.

13—1. NUPHAR, 13. 22.

lutea (water lily.) *kalmiana.* *advena* (y. Ju. ♃.) leaves erect, cordate, entire, stigma with 13 radiating lines.

13—1. NYMPHAEA, 13. 22.

odorata (pond lily. w. Ju. ♃.) leaves round-cordate, entire, submarginate.

21—5. NYSSA, 12. 24.

villosa (pepperidge, tupelo.) *biflora* (sour-gum.)

14—2. OBOLARIA, 40. 35.

virginica (penny-wort.)

14—1. OCYMUM, 42. 39.

basilicum (basil.)

8—1. OENOTHERA, 17. 88.

biennis (scabish, tree-primrose. y. J. ♂.) stem villose, scabrow, stamens shorter than the corol. *parviflora*. *longiflora*. *grandiflora*. *fruticosa*. (sundrops.) *muricata*. *pusilla*. *chrysantha* (dwarf scabish.)

4—1. OLDENLANDIA.

glomerata (round-head.)

22—1. ONOCLEA, 55. 5.

sensibilis (sentitive fern. Ju. ♃.) barren frond pinnate, fertile one doubly-pinnate. *struthiopteris*. *obtusiloba*.

18—1. ONOPORDUM, 49. 54.

acanthium (cotton thistle.)

5—1. ONOSMODIUM, 41. 42

hispidum (false gromwell.)

22—5. OPEGRAPHA, 57. 2.

macularis (lettered lichen.)

22—1. OPHIOGLOSSUM, 55. 5.

vulgatum (addertongue fern. M. ♃.) frond ovate, simple; spikes about an inch long. *bulbosum*.

19—1. ORCHIS, 7. 21.

ciliaris (orchis.) *blephariglottis*. *psycodes*. *cristata*. *lacera*. *discolor*. *flava*. *tridentata*. *fuscescens*. *spectabilis*. *incisa*. *rotundifolia*. *bifolia*. *fimbriata* (p. Ju. ♃.) lip 3-parted; divisions wedge-form, ciliate-fringed. *orbiculata*. *fissa*. *dilatata* (giant orchis.)

14—1. ORIGANUM, 42. 39.

vulgare (wild marjoram.) *majorana* (sweet majoram.)

6—1. ORNITHOGALUM, 10. 16.

umbellatum (star-of-bethlehem.)

14—2. OROBANCHE, 40. 35.

virginiana (false beech-drops, cancer-root.) *uniflora* (squaw-root. p-w. J. ♃.) scape naked 1-flowered. *americana.*

6—1. ORONTIUM, 2. 7.

aquaticum (floating-arum.)

22—2. ORTHOTRICHUM, 56. 4.

anomalum. *cupulatum.* *diaphanum.*

6—2. ORYZA, 4. 10.

sativa (rice.)

3—2. ORYZOPSIS, 4. 10.

asperifolia (mountain rice. Au. ♃.) culm nakedish: leaves rough.

22—1. OSMUNDA, 55. 5.

cinnamomea (flowering fern. y. J. ♃.) frond doubly pinnatifid; fertile ones distinct and panicle-racemed. *interrupta.* *spectabilis.* *regalis.*

20—13. OSTRYA, 50. 99.

virginica (iron-wood, hop hornbeam. g. M. ♄.) leaves ovate-oblong, subcordate.

10—5. OXALIS, 14. 73.

acetosalla (woodsorrel.) *violacea* (violet woodsorrel.) *dillenii* (yellow woodsorrel. y. J. ☉.) hirsute: stem leafy, erect, rough-haired. *stricta* (yellow woodsorrel.) *corniculata.*

8—1. OXYCOCCUS, 18. 51.

palustris (low cranberry. r. J. ♄.) creeping: leaves oval, entire, margin revolute. *macrocarpus* (cranberry. r. J. ♄.) leaves oblong, entire, flattish. *erythrocarpus.*

5—2. PANAX, 46. 59.

trifolia (dwarf ground-nut.) *quinquefolia* (ginseng. w. M. ♃.) root fusiform: leaves ternate, quinate.

13—5. PAEONIA, 36. 61.

officinalis (Peony.)

3—2. PANICUM, 4. 10.

crus-galli (barn grass. Ju. ⊙.) spikes alternate and in pairs, thick, squarrose: glumes hispid, awned: rachis angled: sheath glabrous. *glaucum* (foxtail panic.) *italicum*. *viride*. *capillare*. *virgatum*. *latifolium*. Var. *clandestinum*. *nitidum*. *scoparium*. *hispidum*. *geniculatum*. *ramulosum*. *verrucosum*. *walteri*. *agrostoides*. *nervosum*. *pubescens*. *macrocarpon*. *umbrosum*. *angustifolium*. *barbatum*. *verticillatum*. *discolor*. *dichotomum*. *depauperatum*. *anceps*.

13—1. PAPAVER, 27. 62.

rheas (wild poppy.) *nudicaulis*. *somniferum* (opium poppy. E. J. ⊙.) calyx and capsule glabrous: leaves clasping, gashed, glaucous.

20—4. PARIETARIA, 53. 98.

pensylvanica (pellitory.)

22—5. PARMELIA, 57. 2.

saxatilis. *conspersa*. *crinita*. *centrifuga*. *stellaris*. *olivacea*. *caperata*. *perforata*, somewhat membranous, expanded, glaucous, black-villose beneath, cut-lobed and fringed at the margin: shields funnel-form, at length perforated, rust-colour, with an entire margin. *herbacea*, somewhat membranous, expanded, smooth, bright-green, pale with brown down beneath; lobes cut crenate: shields flattish, red-fulvous, with an inflected nearly entire margin. *pulchra*, somewhat fleshy, thickish, greenish-blue, lobes somewhat sinuate-rounded, unequal, entire, flexuous: shields scattered, pale rust-colour, with a tumid crenulate margin becoming convex and the colour of the frond. *physodes*. *colpodes*. *ciliaris*. *chrysophthalma*.

5—4. PANASSIA, 14. 64.

palustris (false-plantain, parnassus-grass. w-p. Ju. ♃.) radical leaves cordate: nectaries many-bristled. *caroliniana*.

3—2. PASPALUM, 4. 10.

setaceum (paspalon grass.) *ciliatum*. *laeve*. *stoloniferum*.

16—5. PASSIFLORA, 34. 97.

lutea (yellow passion-flower.) *coerulea* (blue passion-flower.) *alata* (winged passion-flower.)

5—2. PASTINACA, 45. 60.

sativa (parsnip. E. Au. ♂.) leaves simply pinnate: leafets glabrous. Var. *arvensis*.

14—2. PEDICULARIS, 40. 35.

canadensis (lousewort. y-p. M. ♃.) stem simple: leaves pinnatifid, gash-toothed. *gladiata* (high heal-all.) *pallida*. *resupinata*. *sceptrum*.

16—7. PELARGONIUM, 14. 73.

triste (mourning geranium.) *daucifolium* (carrot geranium.) *odoratissimum* (sweet-scented geranium.) *zonale* (horse-shoe geranium.) *inquinans* (scarlet geranium.) *acerifolium* (lemon, or maple-leaf, geranium.) *capitatum* (rose-scented geranium.) *quercifolium*, (oak-leaf geranium.) *graveolens* (sweet rose-geranium.)

22—5. PELTIDEA, 57. 2.

vernosa (target lichen.) *canina*. *polaris*. *aphthosa*. *horizontalis*.

10—5. PENTHORUM, 13. 83.

sedoides (virginian orpine. g-y. Ju. ♃.) stem branching, angled: leaves lanceolate, subsessile, unequally and densly serrate.

14—2. PENTSTEMON, 40. 35.

pubescens (beard-tongue. w-p. J. ♃.) stem hairy: leaves serrulate, lance-oblong, sessile. *laevigata*.

6—1. PEPLIS.

americana (mud-carpet. A. g. O.) same as Crypta minima.

5—2. PERIPLOCA, 30. 47.

graeca (follicle vine.)

17—5. PETALOSTEMON, 32. 93.

candidum (split flower.)

22—6. PEZIZA, 58. 1.

scuttellata (dish fungus.) *coccinea* (scarlet dish) scarlet within and buff-yellow without. *bolaris*. *leucomela*.

5—1. PHACELIA, 41. 42.

bipinnatifida (phacelia.) *fimbriata.* *parviflora.*

3—2. PHALARIS, 4. 10.

arundinacea (ribbon grass, wild canary grass. Ju. ♃.) panicle oblong, ventricose, compact. *canariensis* (canary grass.)

22—2. PHASCUM, 56. 4.

muticum. *coherens.*

17—10. PHASEOLUS, 32. 93.

perennis (wild kidney-bean.) *helvolus.* *vulgaris* (common pole-bean. E. p. w. Ju. ☉.) stem twining: racemes solitary. *coccineus* (scarlet runner. E.) stem twining: racemes in pairs. *nanus* (bush-bean, six-weeks bean.)

12—1. PHILADELPHUS, 19. 89.

coronarius (mock-orange, false syringa. E. w. J. ♄.) styles distinct: leaves ovate, subdentate. *inodorus* (scentless syringa. w. J. ♄.) leaves ovate, acuminate, entire. *grandiflorus.*

3—2. PHLEUM, 4. 10.

pratense (timothy grass. J. ♃. and ♂.) spike cylindric, very long, ciliate.

5—1. PHLOX, 20. 44.

paniculata (smooth-stem lichnidia.) *pyramidalis.* *maculata,* (spotted lichnidia.) *suaveolens.* *aristata.* *pilosa* (creeping lichnidia.) *divaricata.* *stolonifera.* *subulata* (mountain pink. r. M. ♃.) caespitose, white-pubescent; leaves linear, pungent, ciliate. *setacea.*

14—1. PHRYMA, 40. 39.

leptostachia (lopseed. P. w. Ju. ♃.) leaves ovate, coarsely serrate, petioled: spike terminal, slender: flowers opposite.

20—16. PHYLLANTHUS, 38. 96.

obovatus (leaf-flower.)

5—1. PHYSALIS, 28. 41.

viscosa. *pennsylvanica.* *philadelphica.* *lanceolata.* *alkekengi* (winter cherry.)

11—10. PHYTOLACCA, 54. 89.

decandra (poke weed. w. Ju. ♃.) leaves ovate, acute at both ends: flowers racemed, berries flattened at the ends.

18—1. PICRIS, 49. 55.

hieraciodes (oxtongue.)

20—16. PINUS, 51. 100.

1. *Leaves solitary with separate bases.*

balsamea (fir tree, balsam tree. M. ♄.) leaves flat, emarginate or entire. *fraseri* (double spruce.) *nigra* (black spruce.) *alba* (white spruce.) *canadensis* (hemlock tree.) *rubra* (red spruce, spruce fir.)

2. *Leaves in pairs, with the bases bound together by sheaths.*

resinosa (yellow pine, norway pine, red pine. M. ♄.) leaves and sheaths elongated. *inops* (jersey pine.) *banksiana* (scrub pine, grey pine.)

3. *Leaves in threes, with the bases bound together by sheaths.*

variabilis (three leaved yellow pine.) *rigida* (pitch pine. M. ♄.) leaves with abbreviated sheaths. *serotina* (pond pine.)

4. *Leaves in fives, with bases bound together by sheaths.*

strobus (white pine.)

5. *Leaves many in a fascicle.*

pendula (black larch, tamarack, hack-matack.) *microcarpa* (red larch.) *larix* (common larch.)

17—10. PISUM, 32. 93.

sativum (pea. E. p-w. J. ☉.) petioles terete: stipules round and crenate at the base. *maritimum* (sea pea.)

4—1. PLANTAGO, 54. 31.

major (plantain. w. J. ♃.) leaves ovate, subdentate, subglabrous: scape terete. *lanceolata* (ribwort.) *virginica* (dwarf plantain.) *cordata*. *pauciflora*. *cucullata*. *meadia*. *maritima*.

20—13. PLATANUS, 50. 99.

occidentalis (button-wood, american planetree, false sycamore. J. ♄.) leaves quinquangular.

3—2. POA, 4. 10.

pratensis (common meadow grass. M. ♃.) panicle spread: spikelets about 4-flowered: glumes lanceolate, 5-nerved, connected by down: stipules abbreviated, obtuse. *compressa* (blue grass. J. ♃.) panicle compact, somewhat 1-sided, glabrous. *palustris* (swamp meadow grass.) *quinquefida* (giant meadow grass.) *annua. nervata. tenella. hirsuta. brevifolia. viridis. capillaris. trivialis. nemoralis. sesleroides. aquatica. parviflora. pectinacea. spectabilis. reptans. stolonifera. pilosa. obtusa. maritima. uniflora. festucoides* (fescue meadow grass.)

10—1. PODALYRIA, 32. 93.

tinctoria (wild indigo. y. Ju. ♃.) very glabrous, branching: leaves ternate, subsessile; leafets wedge-form, round-obtuse. *coerulea.*

13—1. PODOPHYLLUM, 27. 61.

peltatum (wild mandrake, may-apple. W. M. ♃.) stem terminated with 2 peltate palmate leaves.

20—2. PODOSTEMUM, 54. 6.

ceratophyllum (thread-foot.)

5—1. POLEMONIUM, 29. 44.

reptans (greek valerian.)

6—1. POLYANTHES, 10. 16.

tuberosa (tuberose)

17—6. POLYGALA, 33. 35.

incarnata (milkwort.) *rubella* (false low centaury; ground-flower.) *paucifolia* (flowering wintergreen. r. M. ♃.) small, large-flowered; stem simple, leaves ovate, acute, glabrous, near the top of the stem. *uniflora. senega* (seneca snake-root. *lutea* (yellow milkwort.) *viridescens. sanguinea. verticillata* (dwarf snake-root.) *cruciata.*

8—3. POLYGONUM, 12. 28.

marinum (sea knotweed.) *aviculare* (knot-grass. w. M. ☉.) leaves lanceolate, scabrous at the margin; stem procumbent: flowers sessile axillary small. Var. *latifo-*

lium. ramosissimum (branching knotgrass.) *tenue* (slender knotgrass.) *lapathifolium. punctatum* (water-pepper, biting knotweed.) *mite* (tasteless knotweed.) *virginianum. viviparum. coccineum* (lake knotweed.) *persicaria* (ladies' thumb, heart-spot knotweed.) *pensylvanicum* (knee knotweed.) *orientale* (prince's feather.) *articulatum* (joint-weed.) *sagittatum* (prickly knotweed.) *arifolium* (halbert knotweed.) *fagopyrum* (buck-wheat.) *convolvulus* (bind knotweed.) *scandens* (climbing knotweed.) *cilinode.*

18—4. POLYMNIA, 49. 55.

canadensis (white leaf-cup.) *uvedalia* (yellow leaf-cup.)

22—1. POLYPODIUM, 55. 5.

vulgare (polypod. Ju. ♃.) frond deeply pinnatifid; divisions lance-linear, obtuse, crenulate. *hexagonopterum. connectile. calcareum.*

22—2. POLYTRICHUM, 56. 4.

juniperinum (hair-cap moss. M. ♃.) leaves lance-linear, pointed, entire, inflected at the edges, rough on the keel: capsule square, on a flat receptacle. *ambiguum. piliferum. perigoniale. pensylvanicum.*

6—1. PONTEDERIA, 6. 17.

cordata (pickerel weed. b. Ju. ♃.) leaves heart-oblong, obtuse: spike many-flowered, compact.

21—13. POPULUS, 50. 99.

tremuloides (white poplar, american aspen. Ap. ♄.) leaves heart-roundish, abruptly acuminate, tooth-serrulate, glabrous. *grandidentata* (tree poplar.) *betulifolia* (birch-leaf poplar.) *angulata* (balm-of-gilead, water poplar, cotton wood. *balsamifera* (balsam poplar.) *candicans. laevigata* (cotton tree.) *heterophylla* (various-leaved poplar.) *dilatata* (lombardy poplar, italian poplar.

13—13. PORCELIA, 52. 76.

triloba (custard apple.)

10—10. PORTULACCA, 54. 89.

oleracea (purslane. y. J. ☉.) leaves wedge-form: flowers sessile.

4—4. POTAMOGETON, 15. 6.

natans (pondweed. g J. ♃.) leaves long-petioled, floating, lance-oval ; at first some of them are subcordate. *fluitans*. *setaceum*. *perfoliatum*. *lucens*. *crispum*. *pectinatum*. *gramineum* (grass pondweed.) *compressum*.

12—13. POTENTILLA, 35. 92.

1. *Leaves ternate.*

norwegica (cinquefoil.) *tridentatu* (mountain cinquefoil.) *hirsuta*.

2. *Leaves digitate in fives, rarely in sevens.*

canadensis (common fivefinger. y. M. ♃.) procumbent, subramose, whitish-silky : stipules ovate, gashed. *pumila* (dwarf fivefinger.) *simplex*. *argentea* (silver fivefinger.) *recta*.

3. *Leaves more or less pinnate.*

fruticosa (shrubby cinquefoil.) *floribunda*. *anserina* (tansy cinquefoil.) *pensylvanica*. *supina*.

20—13. POTERIUM, 54. 92.

sanguisorba (burnet. E. J. ♃.) stem somewhat angled, unarmed, leaved pinnate.

4—1. POTHOS, 2. 7.

foetida (skunk cabbage. p. ap. ♃.) stemless : leaves radical, heart ovate, very large.

18—1. PRENANTHES, 49. 53.

alba (white lettuce. w-p. Au. ♃.) radical leaves angled-hastate, toothed, somewhat lobed. *altissima*. *cordata*. *virgata*. *rubicunda*.

5—1. PRIMULA, 21. 34.

acaulis (primrose.) *veris* (cowslip primrose.) *elatior* (oxlip primrose.) *auricula* (auricula tulip.) *farinosa* (birds' eye primrose. *mistasinica*.

6—1. PRINOS, 43. 95.

verticillatus (winter berry, false alder. w. J. ♄.) leaves oval, serrate, acuminate, pubescent beneath. *glaber* (ink berry.) *laevigatus*. *ambiguus*.

3—3. PROSERPINACA, 15. 22.

palustris (mermaid weed. g. Ju. ☉.) leaves linear-lanceolate, serrate above water ; pinnatifid below. *pectinata*.

14—1. PRUNELLA, 42. 39.

pensylvanica (heal-all, self-heal. J. ♃.) leaves petioled, oblong-ovate, toothed at the base.

12—1. PRUNUS, 36. 92.

virginiana (wild cherry, rum cherry, cabinet cherry.) *serotina* (choke cherry. w. J. ♄.) flowers in lax racemes: leaves simply serrate. *canadensis*. *pensylvanica*. *borealis*. *nigra*. *pygmaea* (american sloe.) *hiemalis* (winter plum.) *chicasa* (summer plum, chicasaw plum.) *sphaerocarpon*. *maritima*. *pumila*. *depressa*. *spinosa* (english sloe.) *susquehanna*. *cerasifera*. *cerasus* (garden cherry.) *padus* (bird cherry.) *avium* (small bird cherry.) *domestica* (plum.) E. w. M. ♄.) peduncles subsolitary: leaves lance-ovate, convolute: branches thornless. Var. *juliana* (damson plum) fruit oblong, blue. Var. *claudiana* (sweet plum, horse plum) round, at first green, becoming yellowish. Var. *enucleata* (stoneless plum) the putamen obsolete.

22—1. PSILOTUM, 55. 5.

dichotomum (naked ground pine.

22—1. PTERIS, 55. 5.

aquilina (common brake. Ju. ♃.) frond pinnate-3-parted. *atropurpurea* (rock brake.) *gracilis*. *caudata*.

10—1. PTEROSPORA.

andromeda (Albany beach-drops. A. y-w. Au.)

5—1. PULMONARIA, 41. 42.

officinalis (lung-wort.) *parviflora*. *virginica*. *sibirica*.

12—1. PUNICA, 36. 92.

granatum (pomegranite.)

14—1. PYCNANTHEMUM, 42. 39.

incanum (wild basil, mountain mint. w. r. Ju. ♃.) leaves oblong-ovate, acute, subserrate, white downy. *aristacum*.

18—2. PYRETHRUM, 49. 55.

serotinum.

10—1. PYROLA, 18. 51.

rotundifolia (shin-leaf, pear-leaf wintergreen. w. J. ♃.)

leaves round or round-obovate. *secunda* (one-sided shin-leaf.) *uniflora.* *minor.* *asarifolia.*

12—5. PYRUS, 36. 93.

communis (pear. E. w-r. M. ♄.) leaves ovate, serrate, (rarely entire) peduncles corymbed. Var. *pyraster* (dwarf) fruit very small and acid. Var. *falerna* (bergamot) fruit orbicular, apple-form. Var. *pompeiana* (good christian.) Var. *favonia* (musk-pear.) Var. *liqescens* (butter-pear.) Var. *rufescens* (russet-pear. Var. *pyramidalis* (leg-pear.) *malus* (apple. E. w-r. M. ♄.) flowers in sessile umbels : leaves ovate-oblong, acuminate, serrate, glabrous : claws of the petals shorter than the calyx : styles glabrous. Var. *sylvestris* (wild-apple) leaves ovate, serrate; fruit small, austere. Var. *prasomila* pippin.) Var. *castanea* (chesnut-apple.) Var. *apiosa* (ape-apple) fruit small, round, red, pleasant-tasted. Var. *cavillea* (cornered-apple) leaves broad-ovate, downy beneath : fruit angled. *cydonia* (quince. E. w. J. ♄.) flowers solitary. *coronaria* (crab-apple.) *angustifolia.*

5—1. PYXIDANTHERA, 21. 43.

barbulata (box-flower.)

20—13. QUERCUS. 50. 99.

1. ***Fruit subsessile ; leaves mucronate with a bristle-form awn*** (excepting virens) ***entire.***

phellos (willow oak.) *virens* (live oak.) *imbricaria* (shingle oak, laurel oak.)

2. ***Fruit subsessile ; leaves mucronate with a bristle form awn, toothed or lobed.***

heterophylla (burrier's oak.) *triloba* (downy black oak.) *nigra* (barren oak, black jack.) *tinctoria* (quercitron oak, black oak.) *discolor* (false red oak.) *coccinea* (scarlet oak.) *rubra* (red oak,) *falcata* (spanish oak.) *palustris* (pin oak.) *ilicifolia* (scrub oak.)

3. ***Fruit peduncled ; leaves without awns, lobed.***

stellata (iron oak, post oak.) *macrocarpa* (over-cup oak.) *olivaeformis* (mossy-cup oak.) *alba* (white oak.)

4. ***Fruit peduncled ; leaves without awns, toothed, not lobed.***

prinus (swamp chesnut oak.) *prinoides* (dwarf chesnut oak, chinquapin.) *montana,* (rock oak, chesnut oak, mountain oak.) *castanea* (yellow oak.) *bicolor* (swamp white oak.)

3—3. QUERIA, 22. 82.

canadensis (fork chickweed.)

13—13. RANUNCULUS, 26. 61.

acris (crow-foot, butter-cup. y. M. ♃.) hairs close-pressed: leaves 3-parted-many-cleft, upper ones linear: calyx spreading. *abortivus. repens. recurvatus. faccicularis. fluviatilis* (river crowfoot.) *aquatilis* (water crowfoot.) *delphinifolius. bulbosus. hirsutus. flammula* (spearwort.) *sceleratus* (celery crowfoot.) *pensylvanicus. pusillus. lingua* (great spearwort.) *reptans* (dwarf spearwort.) *marylandicus. hispidus. cymbalaria. filiformis. nitidus. auricomus. lanuginosus. saniculaeformis* (sanicle-crowfoot.) *intermedius.*

15—2. RAPHANUS, 39. 63.

sativus (garden-radish. E. w. J. ☉.) leaves lyrate: silique terete, torose, 2-celled.) *raphanistrum* (wild radish, charlock.

11—3. RESEDA, 54. 64.

odorata (mignonette.) *luteola* (dyer's weed.)

5—1. RHAMNUS, 43. 95.

alnifolius (dwarf alder.) *calharticus* (buckthorn.)

9—3. RHEUM, 12. 28.

palmatum (rhubarb.) *tataricum* (pie rhubarb. E. J. ♃.) leaves heart-ovate, entire.

8—1. RHEXIA, 17. 90.

virginica (meadow beauty, deer-grass.) *mariana.*

14—2. RHINANTHUS, 40. 35.

crista-galli (yellow rattle, yellow coxcomb.)

10—1. RHODODENDON, 18. 51.

maximum (wild rose-bay.) *ponticum* (rose-bay.)

10—1. RHODORA, 18. 50.

canadensis (false honey-suckle.)

5—3. RHUS, 43. 94.

typhinum (sumach. y-g. Ju. ♄.) branches and petioles very villose. *glabrum* (sleek sumach.) g. r. Ju. ♄.) branches, petioles and leaves glabrous. *copallinum* (wing-rib sumach, mountain sumach.) *vernix* (poison sumach.) *cotinus* (Aaron's beard, false fringe tree. E. g-y. J. ♄.) *toxicodendron* (poison vine, poison ash.) Var. *radicans* (poison ivy.) Var. *quercifolium* (poison oak.) Var. *microcarpon*. *aromaticum*.

3—1. RHYNCHOSPORA, 3. 9.

sparsa (false bog-rush.) *glomerata*. *alba*. *ciliata*.

5—1. RIBES, 36. 85.

1. *Currant-like. Flowers racemed.*

rubrum (currant. E. g. M. ♄.) unarmed : racemes glabrous, nodding : corol flat ; petals obcordate. *nigrum* (black currant.) *albinervium*. *trifidum*. *ringens*. *glandulosum*. *recurvatum*. *floridum* (wild black-currant.

2. *Gooseberry-like. Peduncles mostly few-flowered ; rarely subracemed.*

grossularia (english gooseberry.) *triflorum* (wild gooseberry.) *hirtellum*. *oxyacanthoïdes*. *gracile*. *lacustris*. *conabasti*.

22—3. RICCIA, 57. 3.

natans (floating liverwort.) *fluitans* (forkstems.) *glauca*.

20—16. RICINUS, 38. 96.

communis (caster-oil plant, palma christi. E. ⊙.) leaves peltate, palmate.

4—1. RIVINA, 12. 29.

laevis (rough-seed.)

17—10. ROBINIA, 32. 93.

pseudo-acacia (locust tree, false acacia. w. M. ♄.) leaves pinnate, with a terminal leafet. *viscosa* (clammy locust.) *hispida* (rose locust.) *caragana* (siberian locust.)

12—13. ROSA, 35. 92.

corymbosa (swamp rose.) *parviflora* (wild rose. r. w.

J. ♄.) germs depressed-globose; germs and peduncles hispid. *rubiginosa* (sweet briar.) *lucida*. *gemella*. *setigera* (bristly rose.) *pendulina* (thornless rose. *nitida*. *canina* (dog-rose.) *gallica* (french rose, common rose.) *damascena* (damask rose.) *muscosa* (moss rose.) *moschata* (musk rose.) *burgundiaca* (burgundy rose.) *semperflorens* (monthly rose.) *alba* (white rose.) *pimpinellifolia* (burnet rose.) *centifolia* (hundred leaved rose.) *cinnamomea* (cinnamon rose.) *multiflora* (japan rose.) *spinosissima* (scotch rose.) *parvifolia* (small-leaf rose.)

2—1. ROSMARINUS, 42. 39.

officinalis (rosemary.)

4—1. RUBIA, 47. 57.

tinctoria (madder.)

12—13. RUBUS, 35. 92.

ideus (garden raspberry.) *strigosus* (red raspberry.) *odoratus* (flowering raspberry.) *occidentalis* (black raspberry.) *villosus* (high blackberry.) *trivialis* (creeping blackberry, dew-berry.) *saxatilis* (brier herb, rock blackberry.) *obovalis*. *cuneifolius*. *hispidus*. *canadensis*. *chamaemorus* (cloud-berry.) *acaulis*.

8—3. RUDBECKIA, 49. 55.

laciniata (cone-flower, cone-disk sunflower. y. Au. ♃.) lower leaves pinnate, leafets 3-lobed, *digitata*. *pinnata*. *triloba*. *fulgida*. *hirta*. *purpurea*.

14—2. RUELLIA, 40. 36.

strepens (ruel.)

6—3. RUMEX, 12. 28.

crispus (dock. Ju. ♃.) valves of the calyx ovate, entire, all bearing grain-like appendages on their backs. *obtusifolius*. *verticillatus*. *britanicus*. *sanguineus* (bloody dock.) *aquaticus* (water dock.) *acutus*. *patientia* (garden dock, patience.)

4—4. RUPPIA.

maritima (tassel pondweed.)

10—1. RUTA, 26. 81.

graveolens (rue. E.) leaves more than decompound.

3—2. SACCHARUM, 4. 10.

officinarum (sugar cane.)

4—4. SAGINA, 22. 82.

procumbens (pealwort.) *apetala.*

20—13. SAGITTARIA, 5. 13.

sagittifolia (arrow-head. w. Ju. ♃.) leaves lanceolate, acute, sagittate; lobes lanceolate, acute, strait: scape simple. *latifolia.* *obtusa.* *hastata.* *gracilis.* *heterophylla.* *lancifolia.* *rigida.* *simplex.* *graminea.* *acutifolia.* *natans.*

1—1. SALICORNIA.

herbacea (samphire, glasswort. Y. H. C. Au. ⊙.) herbaceous, spreading; joints compressed at the apex, emarginate-bifid. Var. *virginica,* has the branches undivided and the jointed spikes very long. *ambigua.*

21—2. SALIX, 50. 99.

1. *Leaves entire, or obsoletely serrate.*

candida (white willow.) *muhlenbergiana* (speckled willow.) *tristis* (mourning willow.) *recurvata* (shrub willow.) *repens* (creeping willow.) *pedicellaris* (stem-berried willow.) *rosmarinifolia* (rosemary willow.) *fuscata* (sooty willow.)

2. *Leaves remotely and obtusely serrate.*

conifera (rose willow, cone-gall willow.) *myricoides* (gale leaf willow.) *prinoides.* *discolor* (red-root willow, basket willow.) *angustata.* *longifolia* (long-leaf willow.)

3. *Leaves closely and acutely serrate.*

babylonica (weeping-willow.) *falcata.* *nigra* (brittle-joint willow, black-willow.) *lucida* (shining willow.) *rigida* (stiff-leaf willow.) *cordata* (heart-leaf willow.) *grisea* (grey-willow.) *vitellina* (yellow willow.) *ambigua.* *russeliana.*

5—2. SALSOLA, 12. 29.

kali (saltwort.) *caroliniana.* *tragus.* *soda.* *salsa.*

2—1. SALVIA, 42. 39.

officinalis (sage.) *sclava* (clarry.) *lyrata* (wild sage.) *verbenaca* (vervain sage.) *urticifolia* (nettle sage.)

5—3. SAMBUCUS, 43. 68.

canadensis (black-berried elder. w. J. ♄.) branchlets and petioles glabrous: leafets about in 4 pairs. *pubescens* (red-berried elder.)

5—1. SAMOLUS, 21. 34.

valerandi (brookweed.)

13—1. SANGUINARIA, 27. 62.

canadensis (bloodroot. w. Ap. ♃.) leaves subreniform, sinuate-lobed: scape 1-flowered.

4—1. SANGUISORBA, 54. 92.

canadensis (burnet saxifrage.) *media*.

5—2. SANICULA, 45. 60.

marilandica (sanicle. w. J. ♃.) leaves digitate; leafets oblong, gashed.

10—2. SAPONARIA, 22. 82.

officinalis (soapwort, bouncing bett. w. J. ♃.) calyx cylindric; leaves lance-ovate. *vaccaria* (field soapwort.)

5—3. SAROTHRA, 20. 82.

gentianoides (nit-weed, false john's wort.)

13—1. SARRACENIA, 13. 12.

purpurea (side-saddle. p. J. ♃.) leaves (which are the lateral brims of large cups) short, erectish, spreading, having reversed prickles within.

14—1. SATUREJA, 42. 39.

hortensis (summer savory. E. b-w. Ju. ☉.) peduncles axillary. *montana* (winter savory.

19—1. SATYRIUM, 7. 21.

bracteatum (satyrion.) *obsoletum*. *virescens*.

7—4. SAURURUS, 2. 6.

cernuus (lizard's tail.)

10—2. SAXIFRAGA, 13. 84.

virginiensis (rock saxifrage.) *pennsylvanica* (water saxifrage.) *sarmentosa* (beef steak.)

4—1. SCABIOSA, 47. 57.

stellata (star scabious, cat's eye. *atropurpurea* (sweet scabious.)

6—3. SCHEUCHZERIA, 5. 13.

palustris (less flowering rush.)

22—1. SCHIZÆA, 55. 5.

pusilla (one-sided fern.)

3—1. SCHOENUS, 3. 9.

setaceus (bog-rush.)

14—2. SCHWALBEA, 40. 40.

americana. chaff-seed.)

3—1. SCIRPUS, 3. 9.

1. *Culm with one terminal spike.*

tenuis (club-rush.) *palustris*. *glaucus*. *capitatus*. *trichodes*. *intermedius*. *planifolius*. *obtusus*. *bracteatus*. *depilatus*.

2. *Culm with several spikes.*

lacustris (great bull-rush.) *acutus* (common bull-rush.) Ju. ♃.) spikes with unequal compressed peduncles, oblong, subumbelled, lateral, near the top. *triqueter*. *debilis*. *ferrugineus*. *spadiceus*. *capillaris*. *autumnalis*. *subsquarrosus*. *retrofractus*. *cyperiformis*. *brunneus*. *atrovirens*. *pendulus*. *lineatus*. *macrostachyos*. *gracilis*.

10—2. SCLERANTHUS, 22. 86.

annuus (knawel, gravel chickweed. w-g. J. ☉.) calyx of the fruit spreading, acute; stem spreading, subprostrate.

20—3. SCLERIA, 3. 9.

triglomerata (whip-grass.) *pauciflora*. *reticularis*. *verticillata*.

22—6. SCLEROTIUM, 58. 1.

semen (barked puff-ball.)

22—1. SCOLOPENDRIUM, 55. 5.

officinarum (caterpillar fern.)

18—1. SCOLYMUS, 49. 55.

hispanicus (golden thistle.)

17—10. SCORPIURUS, 32. 93.

vermiculata (caterpillars.)

18—1. SCORZONERA, 49. 55.

hispanica (viper's grass.)

14—2. SCROPHULARIA, 40. 40.

marilandica (figwort. g-p. Ju. ♃.) leaves cordate, serrate, acute, roundish at the base. *lanceolata.*

14—1. SCUTELLARIA, 43. 39.

galericulata (scull-cap. b. J. ♃.) somewhat simple, glabrous : leaves subsessile, lance-ovate, subcordate at the base, crenate : flowers axillary, solitary. Flowers large. *lateriflora* (mad-dog scull-cap, hoodwort. b. Ju. ♃.) very branching, glabrous : leaves long-petioled, ovate, toothed ; cauline ones subcordate : racemes lateral, leafy. *ovalifolia. parvula. integrifolia. cordifolia.*

3—2. SECALE, 4. 10.

cereale (rye. E. J. ♂.) glume scabrous-ciliate : scales of the calyx narrow : awns long and reverse-prickly : leaves rough near the point.

10—5. SEDUM, 13. 83.

telephium (orpine, live-forever. E. r. w. Ju. ♃.) leaves flattish, tooth serrate, thickly scattered : corymb leafy : stem erect. *ternatum* (false ice-plant.) *anacampseros* (stone crop.)

5—2. SELINUM, 45. 60.

canadense (milk-parsley.)

11—13. SEMPERVIVUM, 13. 83.

tectorum (house-leek.) *arboreum* (tree houseleek.)

18—2. SENECIO, 49. 55.

vulgaris (groundsel.) *hieracifolius* (fire-weed.) *elongatus* (long-stem groundsel.) *aureus* (ragwort.) *balsamitae* (balsam groundsel.) *obovatus. gracilis. canadensis.*

20—4. SERPICULA, 15. 88.

occidentalis (little snakeweed.) *verticillata.*

20—16. SICYOS, 34. 97.

augulata (single-seed cucumber.)

16—13. SIDA, 37. 74.

abutilon (indian mallows. y. Ju. ⊙.) leaves round-cordate, acuminate, toothed, tomentose. *spinosa. crispa. napaea.*

10—3. SILENE, 22. 82.

antirrhina (sleepy catchfly.) *pennsylvanica* (pink catchfly.) *virginica. nocturna. catesbaei. quinquevulnera. armeria* (garden catchfly.) *mollissima* (wax catchfly. E. w. Ju.)

18—4. SILPHIUM, 49. 55.

perfoliatum (ragged cup.) *ternatum. integrifolium.*

15—2. SINAPIS, 39. 63.

nigra (common mustard. E. y. J. ⊙.) silique glabrous, 3-sided, somewhat smooth, close pressed to the stem. *alba* (yellow-seed mustard.)

5—2. SISON, 45. 60.

canadense (hosewort, mock-sanicle.)

15—2. SISYMBRIUM, 39. 63.

amphibium (water radish.) *nasturtium* (english water-cress.) *palustre.*

16—3. SISYRINCHIUM, 6. 18.

anceps (blue-eyed grass. b. J. ♃.) scape [or culm] simple, 2-edged or 2-winged. *mucronatum.*

5—2. SIUM, 45. 60.

latifolium (water-parsnep. w. Ju. ♃.) leaves pinnate; leafets oblong-lanceolate. *lineare. rigidius. longifolium.*

21—6. SMILAX, 11. 12.

quadrangularis (bind-bramble.) *sarsaparilla. rotundifolia* (green brier.) *caduca. pseudo-china. laurifolia. pandurata. peduncularis* (jacob's ladder.) *herbacea.*

5—2. SMYRNIUM, 46. 60.

aureum (alexanders. y. J. ♃.) leaves biternate. ***cordatum.*** ***integerrimum.*** ***barbinode.***

5—1. SOLANUM, 28. 41.

dulcamara (bittersweet.) ***nigrum*** (deadly nightshade.) ***carolinense.*** ***tuberosum*** (potatoe. b.-w. Ju. ♃.) stem wing-angled, unarmed : leaves interruptedly pinnate. ***lycopersicum*** (love apple, tomatoes.) ***melongena*** (egg-plant.) ***pseudo-capsicum*** (jerusalem cherry.)

18—2. SOLIDAGO, 49. 55.

1. ***Flowers one-sided. Leaves with three combined nerves.***

canadensis (canadian golden-rod.) ***procera*** (great golden-rod.) ***serotina*** (smooth golden-rod.) ***gigantea*** (giant golden-rod.) ***ciliaris*** (fringed golden-rod.) ***reflexa*** (hang-leaf golden-rod.) ***lateriflora*** (side-flowered golden-rod.)

2. ***Racemes, or flowers one-sided. Leaves veiny.***

aspera (rough golden-rod.) ***altissima*** (variable golden-rod.) ***rugosa*** (wrinkled golden-rod.) ***villosa*** (soft golden-rod.) ***scabra*** (harsh golden-rod.) ***nemoralis*** (woolly golden-rod.) ***patula*** (spread golden-rod.) ***ulmifolia*** (elm golden-rod.) ***arguta*** (sharp-notch golden-rod.) ***juncea*** (rush-stalk golden-rod.) ***elliptica*** (oval-leaf golden-rod.) ***asperata*** (file-leaf golden-rod.) ***recurvata*** (curved golden-rod.) ***sempervirens*** (narrow-leaf golden-rod.) ***virgata*** (wand golden-rod.) ***odora*** (sweet-scented golden-rod.)

3. ***Racemes erect.***

bicolor (white golden-rod.(***petiolaris*** (late golden-rod.) ***stricta*** (willow-leaf golden-rod.) ***lanceolata*** (grass-leaf golden-rod.) ***tenuifolia*** (pigmy golden-rod.) ***caesia*** (blue-stem golden-rod.) ***livida*** (purple-stem golden-rod.) ***hispida.*** ***hirta*** (hairy golden-rod.) ***lithospermifolia*** (gromwell golden-rod.) ***laevigata*** (flesh-leaf golden-rod.) ***mexicana.*** ***viminea*** (twig golden-rod.) ***erecta*** (upright golden-rod.) ***macrophylla.*** ***flexicaulis*** (zigzag golden-rod.) ***latifolia*** (broad leaf golden-rod.) ***virgaurea*** (mountain golden-rod.) ***rigida*** (hand-leaf golden-rod.) ***noveboracensis*** (star golden-rod.)

18—1. SONCHUS, 49. 53.

leucophaeus (sow thistle. b-w. Ju. ♂.) peduncles scaly :

flowers racemed: leaves runcinate, acuminate: stem wand-panicled. *oleraceus. pallidus. palustris* (marsh sowthistle.) *arvensis. floridanus. acuminatus. alpinus* (mountain sowthistle.)

12—5. SORBUS, 36. 92.

americana (mountain ash. w. M. ♄.) leaves pinnate.

3—2. SORGHUM, 4. 10.

saccharatum (broom corn. E. y-g. Au. ⊙.) panicle somewhat whorled, spreading. *vulgare* (indian millet.)

20—3. SPARGANIUM, 3. 8.

ramosum (bur-reed.) *simplex* (flag bur-reed.) *natans. americanum.* Var. *angustifolium.*

18—1. SPARGANOPHORUS, 49. 55.

verticillatus (water crown-cup.)

17—10. SPARTIUM, 32. 93.

junceum (spanish broom.) *scoparium* (scotch broom.)

10—5. SPERGULA, 22. 82.

arvensis (spurry. w. J. ⊙.) leaves filiform, whorled. *saginoides* (pearl spurry.)

22—6. SPHAERIA, 58. 1.

fragiformis (globule fungus.) *hypoxylon. coccinea. nivea.*

22—5. SPHAEROPHORON, 57. 2.

globiferus (seed-ball lichen.)

22—2. SPHAGNUM, 56. 4.

latifolium. capillifolium (O.) leaves closely imbricate, lance-ovate, acuminate, flattish. *cymbifolium.*

5—1. SPIGELIA, 47. 46.

marilandica (pink-root.)

22—5. SPILOMA, 57. 2.

melaleuca (efflorescent lichen.)

21—5. SPINACIA, 12. 29.

oleracea (spinach.)

12—5. SPIRAEA, 36. 92.

1. *Stem more or less woody.*

salicifolia (meadow-sweet, willow hard-hack. r. w. J. ♄.) leaves lance-ovate, or obovate, serrate, glabrous. *tomentosa* (steeple bush, purple hard-hack. r. Ju. ♄.) leaves lanceolate, unequally serrate, downy beneath. *opulifolia* (nine-bark, snowball hard-hack.) *hypericifolia* (john's wort hard-hack.) *crenata.*

2. *Stem herbaceous.*

ulmaria (queen of the meadow.) *aruncus* (steeple weed.) *lobata. trifoliata* (ipecac, indian physic, Bowman's root.) *stipulacea.*

22—2. SPLACHNUM, 56. 4.

ampullaceum (umbrella moss.)

14—1. STACHYS, 42. 39.

aspera (hedge-nettle, clownheal.)

5—3. STAPHYLEA, 22. 95.

trifolia (bladder-nut. y-w. M. ♄.) leaves in threes : racemes pendant : petals ciliate below.

6—5. STATICE, 48. 33.

limonium (marsh rosemary, sea lavender. b. Au. ♃.) scape terete : panicle much branched. *armeria* (thrift.)

10—3. STELLARIA, 22. 82.

longifolia (long-leaf starwort.) *palustris* (stitchwort, meadow starwort.) *pubera.*

22—6. STEMONITIS, 58. 1.

fascicularis (brittle-bark buff-ball.) *vesiculosa. typhina.*

22—5, STEREOCAULON, 57. 2.

ramulosum (knobbed lichen.) *paschale.*

22—5. STICTA, 57. 2.

pulmonacea. sylvatica.

3—2. STIPA, 4. 10.

avenacea (feather grass.) *sericea.*

17—10. STYLOSANTHUS, 39. 93.

hispida (pencil flower.)

5—2. SWERTIA, 20. 46.

pusilla (false gentian.) *corniculata.*

5—1. SYMPHITUM, 41. 42.

officinale (comfrey. E. y-w. J. ♃.) leaves ovate-sublanceolate, decurrent, rugose.

2—1. SYRINGA, 48. 37.

vulgaris (lilac. E. b-p. w. M. ♄.) leaves cordate: flowers in a styrse. *persica* persian lilac.)

18—2. TAGETES, 49. 55.

erecta (african marygold. E. y. Ju. ☉.) calyx angled. *patula* (french marygold. E. y. Ju. ☉.) calyx smooth.

11—1. TALINUM.

teretifolium (taliny.)

5—3. TAMARIX.

germanica (tamarisk.) *gallica* (french tamarisk.)

18—2. TANACETUM, 49. 55.

vulgare (tansey. E. y. Ju. ♃.) leaves doubly pinnate, gash-serrate.

22—16. TAXUS, 51. 100.

canadensis (dwarf yew, shin-wood.)

22—2. TETRAPHIS, 56. 4.

pellucida (four-tooth moss.)

14—1. TEUCRIUM, 42. 39.

canadense (wood-sage, germander. r. Ju. ♃.) whitish-hirsute: leaves lance-ovate, serrate, all petioled. *virginicum.*

22—6. THAELAEPHORA, 58. 1.

caryophyllea (pink fungus.) *rubiginosa. hirsuta. quercina.*

13—13. THALICTRUM, 26. 61.

dioicum (meadow rue.) *cornuti. polygamum. rugosum. purpurascens.*

13—1. THEA.

bohea (bohea tea.) *viridis* (green tea.)

22—5. THELOTREMA, 57. 2.

pertusus (crust lichen.)

5—1. THESIUM, 31. 24.

umbellatum (false toadflax. w-g. J. ♃.) leaves lance-oval : fascicles of flowers corymb-terminal.

15—1. THLASPI, 39. 63.

bursa-pastoris (shepherd's purse. w. M. ⊙.) hirsute : silicles deltoid-obcordate : radical leaves pinnatifid. *campestris* (yellow-seed, false-flax, mithridate mustard. *arvense* (penny-cress.)

23—16. THUJA, 51. 100.

occidentalis (arbor-vitae, false white-cedar.)

14—1. THYMUS, 42. 39.

serpyllum (mother of thyme.) *vulgaris* (thyme.) *lanuginosus* (lemon thyme.)

10—2. TIARELLA, 13. 84.

cordifolia (miter-wort, gem-fruit. w. M. ♃.) leaves cordate, acute-lobed, toothed.

13—1. TILIA, 37. 79.

glabra (basswood, limetree.) *pubescens* (crop-ear basswood.)

4—4. TILLAEA, 15. 6.

ascendens (pigmy weed.)

22—2. TIMMIA, 56. 4.

polytrichoides (many-haired moss.)

6—3. TOFIELDA, 10. 16.

pusilla (scotch asphodel.) *glutinosa.*

18—1. TOLPIS, 49. 55.

barbata (hawksbeard.)

6—1. TRADESCANTIA, 6. 13.

virginica (spiderwort. b. p. M. ♃.) erect : leaves lanceolate, elongated, glabrous.

18—1. TRAGOPOGON, 45. 53.

porrifolium (vegetable oyster, goat-beard, salsify. E. p. Ju. ♂.) calyx longer than the rays of the corol.

3—2. TRICHODIUM, 4. 10.

laxiflorum (thin-grass.) *scabrum.*

3—1. TRICHOPHORUM, 3. 9.

cyperinum (clump-head grass.)

14—1. TRICHOSTEMA, 42. 39.

dichotoma (blue curls. b. Au. ⊙.) leaves rhom-lanceolate : branches flower-bearing, 2-forked.

22—2. TRICHOSTOMUM, 56. 4.

pallidum (hair-mouth moss.) *canadense.*

7—1. TRIENTALIS. 20. 34.

europaea (chick-wintergreen. w. Ju. ♃.) leaves oval; stem naked below, with a tuft of oval leaves at the top.

17—10. TRIFOLIUM, 32. 93.

pratense (common red clover. r. M. ♃.) leafets ovate, subentire : stipules awned. *repens* (white clover.) *arvense* (rabbit-foot, field clover.) *stoloniferum* (buffalo clover.) *pennsylvanicum.* *reflexum.* *procumbens* (hop clover.) *campestre.* *agrarium.*

6—3. TRIGLOCHIN, 5. 13.

maritimum (arrow-grass.) *palustre.* *triandrum.*

17—10. TRIGONELLA, 32. 93.

foenum-graecum (funegreek.)

6—3. TRILLIUM, 11. 12.

erectum (wake-robin. p-w. M.) peduncles erect or erectish, with the flowers a little nodding : leaves rhomboid, acuminate, sessile. Var. *atropurpureum.* Var. *album.* *cernuum* (nodding wake-robin.) *pictum* (smiling wake-robin.) *pendulum.* *grandiflorum.* *sessile.* *pumilum* (dwarf wake-robin.)

5—1. TRIOSTEUM, 48. 53.

perfoliatum (fever-root, horse-ginsing. p. J. ♃.) leaves oval, acuminate, connate.

3—2. TRITICUM, 4. 10.

hybernum (winter wheat. E. J. ♂.) calyx-glume 4-flowered, tumid, even imbricate, abrupt. *aestivum* (summer wheat.) *compositum* (egyptian wheat. *repens* (wheat-grass, couch-grass.)

13—13. TROLLIUS, 26. 61.

laxus (globe-flower.)

18—1. TROPAEOLUM, 23. 73.

majus (nasturtion, indian cress. E. y. & r. Ju. ☉. ♃.) leaves peltate, sub-repand : petals obtuse, some of them fringed.

22—6. TUBERCULARIA, 58. 1.

vulgaris (tubercle fungus. *rosea.*

6—1. TULIPA, 10. 14.

suaveolens (sweet tulip. E. M. ♃.) small : stem 1-flowered, pubescent. *gesneriana* (common tulip. E. M. ♃.) stem 1-flowered, glabrous.

15—2. TURRITIS, 39. 63.

hirsuta (tower mustard.) *laevigata.*

18—2. TUSSILAGO, 49. 55.

farfara (colt's foot. y. Ap. ♃.) scape single-flowered, scaly. *frigida* (mountain colt's foot.)

20—3. TYPHA, 3. 8.

latifolia cat-tail, reed-mace Ju. ♃.) leaves linear, flat, slightly convex beneath. *angustifolia.*

17—10. ULEX, 32. 93.

europeus (furze.)

5—2. ULMUS, 53. 99.

americana (elm, white elm. g-p. Ap. ♄.) flowers pedicelled. *fulva* (slippery elm, red elm. Ap. ♄.) flowers sessile. *nemoralis* (river elm, grove elm.)

22—4. ULVA, 57. 2.

purpurea (glue-seaweed.) *lactuca. latissima. lubrica. intestinalis. compressa.*

3—2. UNIOLA, 4. 10.

paniculata (sea rush-grass.) *latifolia.* *spicata.*

22—5. URCEOLARIA, 57. 2.

panyrga (pitcher-shield lichen.) *bryophylla.*

22—6. UREDO, 57. 1.

frumenti (blight, grain-rust. O. J. ☉.) linear, oblong, black brown, growing from under the cuticle of culms through the pores. *flava* (yellow rust. O. J. ☉.) *segetum* (smut.) *linearis.*

20—4. URTICA, 53. 98.

dioica (common nettle.) *procera.* *gracilis.* *divaricata.* *pumila* (stingless nettle.) *urens* (dwarf stinger.) *capitata.* *canadensis* (canada nettle.) *whitlowi* (albany hemp.)

22—5. USNEA, 57. 2.

angulata (flat-stem tree-moss.) *florida* (spreading-tree moss. O.) erect, cylindric, rough, greenish-grey, with horizontal fibres: branches scattered, somewhat fastigiate, nearly simple: orbs terminal, large, greenish-white, radiated with fibres: lateral warts or knobs, palish yellow. *plicata* (long tree-moss.) *hirtus.* *strigosus.* *trichodeus.*

2—1. UTRICULARIA, 24. 34.

vulgaris (bladder-wort.) *cornuta* (leafless bladder-wort.) *saccata.* *gibba.* *subulata.* *setacea.* *minor.* *ceratophylla.*

6—1. UVULARIA, 11. 12.

perfoliata (bellwort. y. M. ♃.) leaves perfoliate, oval, obtuse. *sessilifolia.* *lanceolata.* *flava.* *amplexifolia.* *rosea.* *lanuginosa.*

10—1. VACCINIUM, 18. 51.

stamineum (squaw whortleberry.) *dumosum* (bush whortleberry.) *frondosum* (blue whortleberry.) *resinosum* (black whortleberry.) *corymbosum* (giant whortleberry.) Var. *amoenum* Var. *virgatum.* Var. *fuscatum.* *ligustrinum* (prim whortleberry.) *tenellum* (dwarf whortleberry.) *gaultherioides* (wintergreen whortleberry.) *vitis-idaea* (bilberry.)

3—1. VALERIANA, 48. 56.

phu (valerian.)

21—2. VALLISNERIA, 1. 22.

spiralis (tape grass.)

22—5. VARIOLARIA, 57. 2.

faginea (bitter small-pox lichen.) *communis. amara. discoidea* (flat-cup lichen.)

6—3. VARATRUM, 10. 13.

viride (itch-weed, indian poke, white hellebore, g. J. ♃,) flowers in terminal racemed-panicles.

22—4. VAUCHERIA, 57. 2.

bursata. In Rutland ponds.

5—1. VERBASCUM.

thapsus (mullein, y. J. ♂.) leaves decurrent, downy both sides: flowers in a cylindric spike. *blattaria* (sleek-mullein.) *lychnitis.*

14—1. VERBENA, 42. 39.

hastata (vervain, simpler's joy.) *urticifolia* (nettle-leaf vervain.) *angustifolia* (pigmy vervain.) *spuria.*

18—2. VERBESINA, 49. 55.

sigesbeckia (crown-beard.) *virginica.*

18—1. VERNONIA, 49. 55.

noveboracensis (flat-top.) *praealta.*

2—1. VERONICA, 40. 35.

officinalis (speedwell.) *serpyllifolia* (Paul's botany, smooth speedwell, b. M. ♃.) racemes terminal, subspiked: leaves ovate, glabrous, crenate. *beccabunga* (brook-lime.) *anagallis* (brook pimpernel.) *scutellata* (scull-cap speedwell.) *arvensis* (wall speedwell.) *perigrina* (purslane-speedwell.) *agrestis* (field speedwell.) *hederifolia* (ivy speedwell.)

22—5. VERRUCARIA, 57. 2.

stigmatella. nitida.

17—10. VEXILLARIA, 32. 93.

virginiana (butterfly-weed.) *mariana.*

5—3. VIBURNUM, 43. 58.

opulus (guelder-rose, snow-ball. E. w. J. ♄.) leaves 3-lobed, sharp-toothed. *tinus* (laurestine.) *oxycoccus* (high cranberry.) *lentago* (sheep-berry.) *lantanoides* (hobble-bush, tangle-legs.) *acerifolium* (maple guelder-rose, dockmackie.) *dentatum* (arrow-wood.) *pyrifolium*. *prunifolium*. *nudum*. *pubescens*. *edule*.

17—10. VICIA, 32. 93.

faba (garden bean, windsor bean. E. w. & black. J. ☉.) stem many-flowered, erect, strong. *pusilla* (creeping vetch.) *mitchilla* (mitchill's vetch.) *americana*. *sativa* (tare.) *cracca*. *caroliniana*.

5—1. VILLARSIA, 21. 34.

lacunosa (spur-stem, floating heart.)

5—1. VINCA, 30. 47.

minor (periwinkle. b. Ap. ♄.) stem procumbent.

5—1. VIOLA, 29. 80.

1. *Stemless; leaves all radical and the flowers on scapes.*

odorata (sweet violet.) *pedata* (birdfoot violet.) *palmata* (hand violet.) *sagittata* (arrow violet.) *dentata* (toothed violet.) *lanceolata* (spear violet.) *blanda* (smooth violet.) *obliqua* (twisted-wing violet.) *primulifolia* (primrose-leaf violet.) *cucullata* (common blue violet.) *sororia* (bearded violet.) *papilionacea* (butterfly violet.) *rotundifolia* (ground violet.)

2. *Having a stem; more or less of the leaves cauline.*

tricolor (garden violet, heart's ease, pansy.) *canadensis* (woods violet.) *striata* (striped violet.) *debilis* (weak-stem violet.) *rostrata* (beaked violet.) *pubescens* (yellow woods-violet.) *hastata* (halbert violet.) *concolor* (green violet.) *bicolor* (two coloured violet.) *tenella* (slender violet.) *arvensis* (field violet.)

21—4. VISCUM.

album (misseltoe.)

5—1. VITIS, 46. 72.

vinifera (wine grape.) *labrusca* (plum grape.) *aestivalis* (summer grape.) *cordifolia* (frost grape.) Var. *vulpina*. *riparia* (odoriferous grape.)

22—1. VITTARIA, 55. 5.

lineata (ribbon fern.)

22—1. WOODSIA, 55. 5.

hyperborea (flower-cup fern.) *ilvensis*.

22—1. WOODWARDIA, 55. 5.

angustifolia (kidney-fern.) *virginica*.

20—4. XANTHIUM.

strumarium (clott-burr. Au. ⊙.) stem unarmed, branching. *orientale*. *spinosum*. *maculatum*.

6—3. XEROPHYLLUM, 10. 13.

setifolium. This species is described under the Helonias asphodeloides.

5—1. XYLOSTEUM, 48. 58.

ciliatum (fly-honeysuckle, twin-berry. w-y. M. ♄.) berries distinct: leaves ovate and subcordate, margin ciliate. *solonis* (swamp twin-berry. y. M. ♄.) berries united in one, not distinct.

22—6. XYLOSTROMA, 58. 1.

giganteum (punk, oak-leather. O.) fibres parallel, the whole fungus filling the interstices between the cleaveages of decaying wood.

3—1. XYRIS, 6. 13.

anceps (yellow-eyed grass. y. Au. ♃.) leaves linear, obtusish; scape spread and 2-edged near the top. *brevifolia*. *flexuosa*.

5—13. ZANTHORHIZA, 26. 61.

apiifolia (parsley yellowroot.)

21—5. ZANTHOXYLUM, 46. 94.

fraxinium (prickly ash, tooth-ache bush. g-w. M. ♄.) prickly: leaves pinnate.

14—2. ZAPANIA, 40. 40.

nodiflora (fog-fruit.) *lanceolata*.

20—3. ZEA, 4. 10.

mays (indian corn. y-g. Ju. ⊙.) leaves lance-linear, entire, keeled. Var. *precox* (dwarf corn) stem low: seeds mostly 8-rowed.

6—3. ZIGADENUS.

glaberrimus (zigadene.)

18—2. ZINNIA, 49. 55.

multiflora.

20—6. ZIZANIA, 4. 10.

clavulosa (water-oats, wild rice. ⊙.) panicle pyramid-form; staminate flowers below, spreading. *fluitans. miliacea.*

VOCABULARY.*

A.

Abrupt leaf A pinnate leaf, which has not an odd, or terminal leafet.

Accessory. Additional. Annexed and of a different kind, when applied to the border, &c. of the receptacle of a lichen.

Acinaciform leaf. Sabre-form. One edge sharp and convex, the other thicker and strait or concave. Cutlass-form.

Acine. One of the little globules constituting a compound berry; as the raspberry.

Acuminate, 16 **Acute**, 17.

Adnate. Adhering. Any two or more parts of the plant being attached to each other.

Aggregate, 13.

Aigrette, Egret The flying, feathery or hairy crown of seeds; as the down of thistles and dandelions. It includes whatever remains on the top of the seed after the corol is removed.

——*stiped* (stipulatus) when it is supported on a foot-stem.

——*simple* (simplex) when it consists of a bundle of simple hairs, without branches.

——*plumose* (plumosus) when each hair has other little hairs arranged along its sides, like the beards on a feather.

——*membranous*, thin transparent leaves.

Alternate. Branches, leaves, flowers, &c. are alternate, when arranged upon opposite sides of the stem, or whatever supports them; beginning at different distances from its base, and continuing in nearly equal series. Sometimes they are in 3 series.

Ament, 10.

Angular. By means of intervening grooves, the stems, calyces, capsules, &c. have ridges running lengthwise.

Annual. Which springs up, perfects fruit, and dies, in the same year.

Anodynes. Substances which promote sleep.

Anomalous. Whatever forms an exception to the assumed rules or systems.

Anther, 11.

Antiscorbutics. Substances which cure eruptions.

Apetalous. A flower without a corol.

Apex. The tip or top end.

Appendage, 18.

Aquatic. Growing most naturally in or near water.

Aril, *Arillus*. The outer coat of a seed, which, not contracting with it in ripening, falls off.

Arrow-form, 16.

Ascending. Rising gradually between a horizontal and vertical position.

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* Words which are defined in the Grammar are not again defined in this Vocabulary; but a reference to the page of the Grammar is annexed to the word in the Vocabulary.

Astringents. Substances which condense the fibres, and consolidate relaxed parts. They brace up debilitated intestines, and applied externally restrain bleeding wounds, &c.

Auctus calyx. Having an outer row of leafets ; as the Dandelion.

Awl-form, 16.

Awl-pointed. Acuminate.

Awn. A short slender process, or stiff beard, proceeding from the top or back of glumes, or chaff.

Axil. The arm-pit. Applied to vegetables, it means the angle formed by the meeting of a leaf or petiole with the stem, or of a branch with the main stem.

Axillary. Any thing growing from the axils.

Banner. The upper petal in a papilionaceous flower.

Bark, 14.

Basis. Base. The part of a stem, leaf, flower, &c. nearest to the place through which it derives its nutriment.

Beaked. Terminated by a process, formed like a bird's bill.

Bell-form, 10. **Berry,** 12.

Biennial. Springing up one summer, flowering and dying the next, as wheat.

Bipinnate, 18.

Bipinnatifid. Doubly pinnatifid. When the divisions of a pinnatifid leaf are cut in, or pinnatifid again.

Biternate, 17.

Boat-form. Hollow one side with a compressed longitudinal ridge on the opposite side.

Border in Lichens. The edging of their receptacles (apothecium.) It is *proper*, when of the same substance and colour of the receptacle. It is *accessory*, when of a different substance or colour from the disk of the receptacle.

Bract, 18. **Branching,** 14.

Bristle-form. Nearly opposite to a bristle in length and breadth:

Bristly, 17. **Bulbous root,** 14.

Buttons, *Tricæ*. That kind of receptacle of lichens which when magnified resembles a coiled horsehair. They are roundish, sessile, unexpanding, compact, black and solid ; continued along their whole surface. Upper side they are in concentric, or coiled, plaited and twisted folds ; covered every where with the same membrane ; containing seeds without cells, or cases. Smith.

Caducous. Any part of a plant is caducous, which falls off earlier, compared with other parts of the same plant, than is usual for similar parts in most plants. As the calyx of the *poppy* falls off before the corol is hardly expanded.

Caespitose. Turfy. Several plants growing together, or from the same root, forming a turf.

Calycled. See auctus.

Calyptra, 10. **Calyx,** 9. **Camb,** 14.

Capillary. Hair form ; longer than bristle-form, in proportion to its thickness.

Capitate. Head-form ; growing in heads.

Capsule, 12.

Carinate. See keeled.

Cartilaginous. Hard and somewhat flexible. It applies to a leaf, when it is bound around with a strong margin, different from the disk of the leaf.

Caryophylleous, 11.

Catkin. See ament.

Cathartics Substances which stimulate the intestines so as to hasten and increase evacuations.

Cauline. Growing on the main stem.

Caustics. Substances which corrode, burn or dissolve the part with which they come in contact.

Cell. The hollow part, or cavity of a pericarp or anther. It is more generally applied to the cavities of pericarps, where seeds are lodged. According to the numbers of these the pericarps are called *one-celled, two-celled,* &c.

Cellular integument, 14.

Cellules, *cistulæ.* That kind of receptacle of lichens, which is globose, terminal and formed of the substances of the frond. It is filled with uncoated seeds, intermixed with fibres; at length it bursts irregularly. Smith.

Cespitose. See Cœspitose.

Channelled. Hollowed out longitudinally with a rounded groove of considerable depth.

Ciliate, 17. **Clasping**, 17.

Clavate. Club-form. Growing larger towards the end.

Claw. The lower narrow part of a petal by which it is fixed on the calyx or receptacle. It can exist only in Polypetalous corols.

Cleft. Split down, not exceeding half way to the base; with nearly strait edges on both sides of the fissure. The parts into which it is split are numbered in descriptions; as once split making two divisions, is called 2-cleft; two splits, 3-cleft, &c.

Clefts, *lirellæ.* That kind of receptacle of *lichens,* which is open, elongated, sessile, black, very narrow or linear, with a somewhat spongy disk; the border is parallel on each side and proper. Sometimes it has an accessory border from the crust besides. The *clefts* are either simple and solitary; or aggregate, confluent and branched. Smith.

Climbing. Ascending by means of tendrils, as grapes: by leaf-stalks as virgin's bower; by cauline radicles, or rootlets, as the creeping American ivy, (rhus-radicans.) It differs from *twining,* which see.

Club-form. See clavate. **Cobwebbed.** See arachnoideus.

Cochleate. Coiled spirally, like a snail-shell.

Coiled. Twisted like a rope; or rather resembling the form of one thread of a rope, after the other threads are removed.

Coloured. **Columella**, 12.

Common. Any part is common, which serves to include or sustain several parts, similar among themselves.

——— *perianth.* Including several florets; as in the thistle.

——— *involucre.* Surrounding the base of the peduncles, in an umbel, which are subdivided above.

This term is often used for *frequent* also.

Complete, Having both calyx and corol.

Compound, 13.

Conic. With a broad base and approaching a point towards the top.

Connate, 17.

Contra. See partition.

Converging. Approaching, or bending towards each other.

Convex. Swelling out in a roundish form.

Corcle, 12. **Cordate,** 15.

Coriaceous. Leathery or parchment-like.

Cornered. Having angles or corners. Three-cornered, four-cornered, &c. is often expressed trigonus, &c.

Corol, 9. **Corymb,** 13. **Cotyledon,** 12.

Cowled. When the edges meet below and expand above, and generally separate; as the spathe of the *arum*, Indian turnip.

Creeping, 14. **Crenate.** 16.

Crested. Having an appendage somewhat resembling a cock's comb in form.

Cruciform, 11. **Cryptogamous,** 9. **Culm,** 15.

Culmiferous. Having culms.

Cupform. Hollow within, resembling a little cup.

Cuspidate. Having a sharpened point and that tipped with a bristle, a prickle, or lengthened apex, not curved. See mucronate and observe the distinction; also acuminate.

Cuticle, 14.

Cyathiform. Wineglass-form. Cylindric, widening gradually upwards, margin not revolute.

Cylindric. A circular shaft, of nearly equal diameter throughout its whole extent.

Cyme, 13.

Deciduous. Falling off in the usual season for similar parts to fall; as leaves falling at the decline of the year; corols falling off at the time the stamens fall, &c. See caducous and permanent.

Decumbent. When the base is erect, and the remainder lies on the ground. It applies to stems, stamens, &c.

Decurrent, 17.

Decussate. When leaves or branches are opposite in pairs, and each pair stands at right angles with the next pair above or below on the same stem.

Deflected. Bending down archwise.

Dehiscent. The natural opening of capsules in the proper season.

Deltoid. A leaf with four corners; that is, one at the stem, one at the apex, and one each side; but the side ones are nearer to the base than to the apex. When the side angles are about as near to the apex as to the base, it is called a *rhomboid* leaf. Both kinds are called *diamondform* in English.

Dense. Close, compact. A panicle with abundance of flowers very close is dense. See thyrse.

Dentate. Toothed.

Denticulate. Having very small teeth.

Deobstruents. Substances which remove obstructions.

Detergents. Substances calculated for cleansing.

Diaphoretics. Those secernant stimulants which promote perspiration more particularly.

Dichotomous. Forked. Stem, &c. parted in pairs, each branch parted in pairs again, and so on. When it is parted but once it is more properly called forked.

Didynamous. Belonging to, or varying into the class didynamia.

Diffused. Spreading. Expanded in an open loose manner.

Digitate Fingered. When the base of several leafets rest on the end of one petiole; as the strawberry and fivefinger.

Dilated. Expanded, widened.

Diœcious. Belonging to, or varying into the class *diœcia*.

Discoid. Having a disk without rays.

Disk. The whole surface of a leaf, or of the top of a compound flower, as opposed to its edge or periphery. This term is also applied to the aggregate florets of an umbel.

Dissiliens. A pericarp is dissilient, when it bursts open with a spring, as the touch-me-not, (impatiens.)

Diuretics. Those secernant stimulants which increase urine more particularly.

Divaricate. Branches spreading out from the stem so far, as to form more than a right angle with it above.

Diverging. Branches spreading out from the stem so far as to form almost a right angle with it.

Dorsal. Fixed to the back. Awns are dorsal, when proceeding from the outside of a glume and not from the tip.

Down or downy, 17. **Drupe,** 12.

Drupaceous. Bearing drupes, or fruit resembling them.

Eared. This term applies; 1st to the round extended, or appendaged lobes of a heart-form leaf: 2d, to the side lobes near the base of some leaves: and 3d, to twisted parts, in some ferns and some liverworts, which are supposed to resemble the conchus, or passage into the ear.

Echinate. Hedge-hog-like. Beset with erect prickles.

Eggform. See ovate.

Egret. See aigrette.

Elastic. See dissiliens.

Eliptic. Longer than wide, rounded at or near both ends, and nearly equal in breadth towards both base and apex.

Elongated. Lengthened out, as if extended beyond what is usual in similar parts.

Emarginate, 17.

Emetics. Substances which excite vomiting.

Emollients. Substances which soften tumors or any hardness or dryness of the skin.

Ensiform. Sword-form. Two-edged, tapering from base to apex mostly, and a little arching towards one edge; as flag and cat-tail, (Iris and Typha.)

Entire. Continued without interruption. A margin of a leaf, calyx, corol, &c. is entire, when it is neither serrate, toothed, notched, nor in any manner indented.

Equal. Similar parts equal among themselves. The calyx, corol, &c.

are equal, when the leafets, petals, or subdivisions, are similar in form, size and direction. Opposed to unequal.

Erect. Upright.

Erose. Gnawed. Unequally sinuated as if the sinuses had been eaten by insects.

Evergreens. Such plants as retain their leaves throughout the year, as white pine, laurel, &c.

Exotic. Plants not growing spontaneously in a wild state in that particular country, or section of a country.

Exsert. Standing out. Stamens are exsert when protruded out of the corols.

Factitious character. Added to more essential distinctions.

Families. See gentes.

Fascicle. 13. A bundle.

Fascicled. 17.

Fastigiate. Level-topped.

Faux. Jaws. The throat or opening into a corol. That precise spot, where the tubular part of a ringent corol begins to separate or expand into lips or mouth, is the faux.

Fibre. Any thread-form part. **Fibrous**, 14. **Filament**, 11.

Filiform. Thread-like.

Fissure. A cleft or slitted aperture.

Flexuose. Bending and frequently changing direction.

Floret. Little flower. Whether the flower is large or small, it is a floret, if it is one of a number all of which constitute an aggregate or compound.

Follicle. A pericarp with one valve, which opens lengthwise on one side only; as milk-weed (asclepias.)

Footstalk. See *peduncle* and *petiole*, it is put for both.

Forked. See dichotomous. **Frond**, 15.

Fructification. "The temporary part of vegetables, which is destined for the reproduction of the species, terminating the old individual and beginning the new."

Fruit-dots. Assemblages of capsules on the backs of ferns.

Fugacious. Soon disappearing. Flying off.

Funnel-form, 10. **Furrowed.** See sulcate.

Fusiform. Spindle-form.

Galls. **Excrescences** produced by the stings of insects. The balls found on oaks which are used in dyeing, the common large green oak-balls, the singular green lumps found on the wild honey-suckle, &c. are examples.

Gashed. See incised. **General.** See partial.

Generic name. The name of a genus.

Geniculate. Kneed. Forming a very obtuse angle, like a moderate bending of the knee.

Gentes. Nations. Linneus divided plants into nine great natural tribes or casts. 1. **Palms** (palmæ;) as the date and cocoa-nut. 2. **Grasses** (gramina;) as wheat, Indian-corn, sugar cane, rice, timothy-grass, &c. 3. **Lillies** (lilia;) as lily, tulip, daffodil, &c. 4. **Herbs** (herbæ;) as thistles, nettles, pease, mint, potatoes, hemp, plantain, beets, and all other herbaceous plants except the above. 5. **Trees**

(arbores;) as oak, chesnut, pine, willow, dogwood, currants, lilac, whortleberry, cranberry, and all other plants with a woody stem. 6. **Ferns** (filices;) as brake, polypod, maidenhair, ground pine, and all other plants of this order, which see. 7. **Mosses** (musci.) See the order. 8. **Algæ**. This tribe includes the plants of the orders, *hepaticæ*, *algæ* and *lichenes*, which see. 9. **Fungi**. As mushroom, toadstool, puff ball, mould, blight, &c.

Genus, (plural *genera.*) A number of plants which agree with one another in the habit and structure of the flower and fruit.

Germ, 11.

Glabrous. Sleek. Having no pubescence.

Gland, 18.

Glaucous. Clothed with a seagreen mealiness, which is easily rubbed off. It is sometimes put for a greenish-grey colour.

Globose. Spherical, round on all sides like a ball.

Globules. That kind of receptacle of lichens, which is globose, solid and crustaceous, formed of the substance of the frond, and terminating its points or branches; from whence they fall off entire, leaving a pit or cavity. They are supposed to be covered all over with a coloured seed-bearing membrane. Smith.

Glume, 10.

Glutinous. Having on some part more or less of adhesive moisture.

Gnawed. See erose. **Granulate**, 14.

Grooved. See sulcate. **Guitar-form**, 16.

Habitat. The native residence of plants; or the situation wherein they grow most naturally.

Habit. The external appearance of a plant by a general view of which we know it without attending to any of its essential characters.

A knowledge of the habit of plants is to be acquired; by first seeing them in a growing state, and then by repeatedly reviewing them in a **herbarium**.

Halbert-form, 16. **Hastate.** **Head**, 13.

Herbaceous. Not woody. **Herbage**, 15.

Herbarium. A collection of dried plants.

Hexagonal. Six-cornered. **Hilum**, 12.

Hirsute. Rough-haired.

Hispid. Bristly. Beset with stiff hairs.

Hollows, (thalamia.) That kind of receptacle of *lichens*, which is spherical, nearly closed, lodged in the substance of the frond, lined with its proper coat, under which are cells 2 or 4-seeded. Each hollow finally opens by an orifice in the surface of the frond above. Smith.

Hooded. See cowled.

Horizontal. Parallel to the horizon. Leaves are horizontal, when they form right angles with erect stems.

Horn. See spur.

Imbricate, 17. **Imperfect.** Wanting the stamen or pistil.

Incised. Cut in like a gash with a knife.

Incurved. Bent inwards.

Indigenous. Plants, growing naturally and originally in a country, are indigenous to that country.

Indurated. Becoming hard, tough, or leathery.

Inferior. Below. A calyx or corol is inferior when it comes out below the germ. See germ.

Inflated. Appearing as if blown up with wind.

Inflexed, *inflexus*. The same as incurved.

Inflorescence, 13. **Interruptedly pinnate,** 18.

Introduced. Not originally native. Brought from some other country.

Involucre, 9.

Involucres of ferns generall lie on the tops of the capsules, like a piece of linen spread out to dry. They are said to open inwards, when they separate from the frond so as to leave the capsules naked on the side next the midrib.

Involute. Rolled inwards.

Irregular. Differing in figure, size, or proportion of parts, among themselves.

Keel, 11.

Keeled. Having a ridge resembling the keel of a boat or ship.

Kidney-form, 16.

Kneed. See geniculate.

Knobs (Cephalodia.) That kind of receptacle of lichens, which is convex, more or less globular, covered externally with a coloured seed-bearing crust, and placed generally at the extremities of stalks, originating from the frond, permanent; rarely sessile. Sometimes they are at first *spangles* on filamentous lichens, and afterwards become convex irregular knobs. They are simple, compound or conglomerate. Smith.

Labiate, 10.

Lacerated, *lacerus*. Torn. Cut, or apparently torn into irregular segments.

Lamina. Thin plate. The broad upper part of the petal of a polypetalous corol.

Lanceolate, 16.

Lance-ovate, &c. Pertaking of the lanceolate form and of that with which it is compounded.

Lateral. On one side.

Leafet, or **Leaflet.** One of the lesser leaves which, with others, constitue a compound leaf. A simple leaf is never a leafet, however small.

Legume, 12.

Ligulate. That kind of floret, in some compound flowers, which consists of a single strap-like petal which becomes tubular at the base only; as all the florets in a dandelion, and the ray florets in a sunflower.

Liliaceous, 11.

Limb. The broad spreading part of the petal of a monopetalous corol.

Linear, 16.

Lion-toothed. See runcinate.

Lobe. Divisions, which are rounded, or parted by rounded or curved incisions.

Lobed, 16.

Loment. A legume pod with transverse partitions.

Lurid. Of a palish, dull, deathly colour. Most plants with lurid petals are more or less poisonous; as tobacco, henbane, thorn-apple.

Lyrate, 16.

Lyrate-pinnate. Pinnate with the odd terminal leafet largest.

Many. Whenever there are more than are usually numbered; as we say, 1-seeded, 2-seeded, 3-seeded, 4-seeded, many-seeded.

Marginated. Having a margin different in some measure from the disk.

Mature. Full-grown, but not entered upon a state of decay.

Membranaceous or **Membrane.** Made up, apparently, of the two plates of the cuticle, without any cellular integument between them. Nearly transparent, very thin and often colourless.

Midrib. The main or middle rib of a leaf running from the stem to the apex.

Monœcious. Belonging to, or varying into, the class monœcia.

Monopetalous, 10. **Monophyllous**, 9.

Monstrous. Plants producing any part different from the same part, when growing wild. As the rose has but five petals in a wild state; but by rich cultivation in gardens, the stamens are mostly changed to petals. Carnations and peony are examples also. These are all monsters.

Mucronate. Having a rounded end, tipped with a prickle; which often appears rather an extension of the midrib.

Muricate. Armed with sharp spines. Covered with subulate prickles.

Naked. Wanting a covering analagous to that of most plants. As stem without leaves, leaves without pubescence, corol without a calyx, seed without a pericarp, receptacle without chaff, pubescens, &c.

Narcotics. Those poisons which, in small doses, stimulate at first and promote secretions; afterwards induce dulness and sleep. But in large doses produce delirium, convulsions and death. Some narcotics inflame the stomach.

Natant. Floating.

Nectary. That part of a flower, which secretes honey. It is either a distinct horn, gland, spur, scale, cup, &c. or the claw or some other part of the corol secreting honey. This name is applied to any appendage to the flower, which has no other name.

Nerved, 17. **Neutral**, 13.

Nodding. See nutans.

Nucleus. Nut or kernell. The inner seed or kernel is properly the nucleus; and its hard shell is the putamen. But the whole including both putamen and nucleus, is the nut, *nux*.

Nut. See nucleus.

Nutant. *nutans.* Nodding. When above half of whatever it is applied to, droops or hangs down.

Nutrientics. Substances which serve for food.

Obcordate, 15.

Oblanceolate. Lanceolote with the base narrowest.

Oblique, *obliquus* A position between horizontal and vertical; or between the perpendicular and the plane of the base. It is also applied to leaves, petals, calyxes, &c. which are, as it were, cut obliquely; or whose bases are shorter on one side than on the other.

Oblong, 15. **Obovate**, 15.

Obsolete. When teeth, notches, serratures, &c. are obscure and appear as if worn out.

Obtuse, 17.

Officinalis. Such plants as are sold in the shops for some use, either in medicine or the arts.

Opposite, 17. **Orbicular**, 15.

Orbs. That kind of receptacle of lichens, which is flat, orbicular and dilated, of the substance of the frond, terminal, peltate, without a border, but often surrounded with radiating shoots. The membrane, or disk under which the seeds are lodged, is smooth, nearly of the colour of the frond. Spurious orbs bordered like shields or spangles when young, are sometimes found in the genus *cornicularia*. Smith.

Oval, 15. **Ovate**, 15. **Palmate**, 16. **Panicle**, 13.

Papilionaceous, 11.

Parallel. Two lines or opposite sides, running nearly equal distances from each other.

Parasitic. Drawing support from another plant. Growing out of another; as the dodder.

Partial. Particular not general The perianth, involucre, peticle, &c. of one floret, or of a separate part of all the florets, which with others constitute a compound or aggregate.

Partition. The membrane. &c. which divides pericarps into cells. It is *parallel*, when it unites with the valves, where they unite with each other. It is *contrary* or *transverse*, when it meets a valve in the middle, or in any part not at its suture, or juncture with another.

Parted, *partitus*. Deeply divided, almost to the base.

Pedate, 16.

Pedicel. A partial peduncle.

Peduncle, 15. **Peltate**, 17.

Pendulous. When the whole of the part droops, or hangs down.

Perennial. Continuing more than two years.

Perfect flower, 13. **Perfoliate**, 17.

Perforate. Having holes as if pricked through.

Perianth, 9. **Pericarp**, 9.

Peristome. The fringe, teeth, or membrane, around the mouth of the capsules of mosses, under the lid.

Permanent. Any part of a plant is permanent, which remains longer compared with other parts of the same plant, than is usual for similar parts in most plants. As the calyx of the quince remains on the end of the fruit, till it ripens.

Personate, 10.

Petal. The coloured leaf or leaves of the corol. The petal of a monopetalous corol is divided into the *tube* and *limb*. Each petal of a polypetalous corol is divided into the *claw* and *lamina*.

Petal-form. Resembling a petal in shape.

Petiole, 15. **Phanerogamous**, **Phænogamous**, 9.

Pileus. The hat of a fungus.

Pilose. Hairy.

Pinnate, 18. **Pinnatifid**, 16. **Pistillate flower**, 13. **Pistil**, 9.

Pitcher-form. See urceolate.

Pith, 14.

Pits, (cyphellæ.) That kind of receptacle of lichens, which consists of open, cup-like, naked, white or yellow little spots, on the under side of the frond; which is generally downy. They are at first immersed, globose, minute dots, which at length burst with an irregular margin, and discharge a powder.

Plaited. Folded somewhat like a fan, when nearly full spread.

Plant. Any substance growing from seed. As trees, grass, puff-ball, mould.

Plumose. Feather-like.

Plumose *egret*. Feather-like down. When a hair has other hairs arranged on opposite sides of it.

Pod That kind of pericarp which is composed of two valves with the seeds attached to one or both sutures, or a longitudinal partition at the edges immediately adjoining the sutures. The pod is either a legume or silique.

Pollen, 11.

Polyadelphia. (*Polus*, many; *adelphos*, brother.) Many brotherhoods. The name of the abolished eighteenth class as first established by Linneus. This class includes all plants with perfect flowers, whose stamens are united by their filaments in three or more sets, or brotherhoods.

Polyadelphous. Belonging to, or varying into, the class polyadelphia.

Polygamia. The name of the twenty-third class as established by Linneus. It comprises all plants, which have some perfect flowers, and others which are staminate and pistillate, or both kinds This class is divided into three orders. 1. *Monœcia*, having perfect flowers and either staminate or pistillate ones or both on the same plants. 2. *Diœcia*, having perfect flowers on some plants, and either staminate or pistillate flowers on others of the same species. 3. *Triœcia*, having perfect flowers on some plants, staminate on others, and pistillate on others of the same species. This class like the 18th, is abolished by Persoon and others, and the plants under it distributed among the other classes.

Polygamous. Varying into, or inclining to, the class *polygamia*.

Polypetalous, 10. **Polyphyllous**, 9. **Pome**, 12. **Prickle**, 18.

Prismatic. Linear with several flattish sides. A cylinder with flat sides.

Process. A projecting part.

Procumbent. Lying on the ground.

Proliferous. Putting forth branches or flowers from the centre of the top of a preceding one.

Proper, 12.

Pubescent. Hairy. having hairs, wool, down. glandular hairs, &c.

Puffs, (pilidia.) That kind of receptacle of lichens, which consists of little round bordered knobs, whose disk finally turns to powder. It is at first covered with a membrane and often clothed with a fine grey hoariness. These receptacles are elongated below into a stalk fixed to the crust, but totally different from it.

Punctate. Dotted or sprinkled with coloured, generally diaphanous, specks. See perforated.

Putamen. Nut-shell. See nucleus.

Qualities of plants Richard says that plants of the same taste and odour, are generally possessed of similar qualities. Also that the smell and taste are always the same. He divides the odours of plants into, 1. *Fragrant*. 2. *Aromatic*. 3. *Ambrosiac* (resembling amber.) 4. *Alliaceous* (resembling garlic.) 5. *Fetid* (as asafœtida, &c) 6. *Nauseous* (causing the stomach to heave.) As the fragrant, the aromatic and ambrosiac, are always free from all hurtful qualities, and as the fetid and nauseous are generally poisonous; it seems that mankind have in some measure an instinctive principle by which food is to be selected.

Raceme, 13. **Rachis,** 12

Radiate. The spreading florets around the margin of a compound flower As the Sunflower.

Radical, 17.

Radicle. The little fibrous branches proceeding from the main root.

Ray. The outer margin or circumference of a compound flower.

Receptacle, 9.

Recurved. Curved downwards.

Reflexed. Bent back, nearly or quite to touch the stem or peduncle.

Refrigerants. Substances which directly reduce the heat of the body.

Regular. See equal.

Reniform. See kidney-form.

Resupinate. Upside down.

Reticulate. Netted. Having veins crossing each other like net-work.

Retuse, 17.

Rib. A nerve-like support to a leaf.

Rigid. Stiff, inflexible, or not pliable.

Ring The band around the capsules of ferns which is elastic.

Ringent, 11.

Root, 14. **Rosaceous,** 11.

Rotate See wheel-form.

Rough Covered with dots, which are harsh to the touch.

Rugose Wrinkled or humped. Veins more contricted than the disk, so that the intermediate pyrenchyma rises up between them.

Runcinate, 16.

Sabre form. See acinaciform.

Sagittate. See arrow-form.

Salver-form, 10.

Samara. A winged pericarp not opening by valves; as the Maple.

Saucer-form Shaped like a common tea-saucer.

Scabrous. Rough.

Scaly. Covered more or less with scaly appendages. as Fern roots; or consisting of substances, in some measure resembling coarse fish-scales; as the scales of Lily roots.

Scape, 15.

Scarious, *scariosus* Dry and membranous, generally transparent.

Scattered. Standing without any regular order

Scrobiculate. Deep round pits on the receptacle gives it this name.

Secernant stimulants. Substances which encrease perspiration, or promote the secretion of other substances which it is desirable to have evacuated from the system.

Segment. The parts into which a calyx, corol, leaf, &c. is divided or cut.

Sericeus. See Silky.

Serrate, 16.

Serrulate. When a serrate leaf has the teeth serrate again.

Sessile. Sitting down. When a leaf, flower, seed-down, pileus of a fungus, receptacle of a lichen, &c. are destitute of a petiole, peduncle, stipe, &c.

Setaceous. Bristle-form.

Setose. Bristly,

Sharp Tapering to a point.

Sheath. The lengthening of a leaf down the stem, which it incloses.

Sheathing, 17.

Shields, *scutellæ*. That kind of receptacle of lichens. which is open, orbicular, saucer-like. The underside and border are of the substance and colour of the frond The disk is of a different colour and substance from the border and frond, containing the seeds in extremely minute vertical cells The shields are thick and tumid, when they are sessile; and membranous when stalked or elevated. Very rarely they are perforated in the centre. Smith.

Silicle. A little silique, whose length and breadth are nearly equal.

Silique, 11.

Silique-form. Shaped like a silique without its essential character.

Silky. 17. **Simple**, 12. **Sinuate**, 16.

Sinuate-serrate. Having serratures hollowed out.

Solitary. Standing alone or very distant from others of the same kind

Somewhat. Used as a diminutive; implying in some degree, not fully. President Smith translates *sub*, by *somewhat*, when combined with an adjective; as *subtrifidus*, somewhat three-cleft.

Spadix, 12.

Spangles. *patellulæ*. Open and orbicular, like shields, but sessile, and not formed of any part of the crust, from which they differ in colour being most usually black. The seeds are lodged beneath the membrane that covers their disk, as in the former, and the disk is surrounded by a *proper* border. Their seeds are observed to be naked in the cellular substance of the disk, not enclosed in cases. Disk sometimes concave or flat, oftener convex and even globose without any apparent border when in an advanced state.

Spathe, 10.

Spatulate. Roundish and diminishing into a long, narrow linear base.

Spike, 13.

Spikelet. One of the subdivisions of a spike.

Spindleform, 14.

Spinose. Thorny.

Spiral. Twisted like a screw.

Spur. An elongated process from the base, or from near the base of the calyx or corol or nectary, somewhat resembling a horn or cock's spur.

Squarrose. Ragged. When the points of scales, &c. bend outwards, so as to make a ragged appearance. It is also used for scurfy, or when covered with a bran-like scurf.

Stamen, 9. **Staminate**, 13.

Stellate. Spreading out in a radiate manner. Leaves are stellate, when three or more surround the stem in a whorl

Stem The main base or supporter of the fructification and herbage.

Stigma, 11. **Sting**, 18. **Stipe** 13. **Stipule**, 16.

Stomachics. Substances which directly excite and strengthen the action of the stomach.

Striate, streaked. Marked or grooved with slender lines.

Strigose. Armed with small, close, rigid bristles, which are thickest below.

Strobile, 12. **Style**, 11.

Sub. Used in combination as a diminutive, for somewhat.

Subulate. See awl-form.

Sulcate, *sulcatus*. Furrowed. Marked with deep lines.

Superior. A calyx or corol is superior when it proceeds from the upper part of the germ.

Suture. A seam-like appearance at the meeting of two parts; as the valves of pea-pods.

Sword-form. See ensiform.

Tegument, 12. **Tendril**, 16.

Terete. Round, columnar and tapering from the base to the other end.

Terminal. Proceeding from or occupying the end of a stem, branch, style, &c.

Ternate, 17. **Thorn, or spine**, 18.

Throat. See faux.

Thyrse, 13. **Tige**, 15.

Tomentose. Covered with fine downy or cottony substance matted together.

Tonics. Substances which give strength to the system. They are stimulants which are permanent in their operation.

Toothed, 16.

Torulose, *torulosus*. With swelling ridges or bumps, like the muskmelon or horse-radish pod.

Translucent. Transmitting light faintly.

Transverse. Crosswise.

Triangular. Having 3 angles or corners. It is applied to a leaf with 3 points or corners.

Tripinnate, 18.

Tripinnatifid. A pinnatifid leaf, with the divisions pinnatifid, and those latter divisions pinnatifid again.

Triternate, 17.

Truncate. The end appearing as if cut off.

Tube. The lower hollow cylinder of a monopetalous corol.

Tubercles That kind of receptacle of lichens, which is spherical or slightly conic, nearly closed, crustaceous, black; more or less immersed in the surface of the crustaceous frond, which it elevates; or sometimes it is exposed, being merely sessile. Each contains a ball, or mass, of connected seeds, destitute of cells, enveloped in a common membrane. The whole mass of seeds is at length discharged together by an orifice at the top of the tubercle. We often find these tubercles after the seeds are discharged.

Tuberous, 14.

Tubulous, **tubulose**. That corol of a compound flower, which forms a whole tube, not a ligulate floret. It is also applied to a perianth, if the whole or the lower part is a hollow cylinder.

Turbinate. Top-form.

Turgid. Thickened, swollen, but not inflated.

Twining. Ascending spirally.

Valve. The several pieces of a pericarp, which separate naturally on ripening, are called valves. Also the leaves, or chaffs, of a glume. Each piece is called a valve. This name is sometimes applied to the scales, which close the tube in some corols.

Variety. The changes produced among plants of the same species by accidental causes; as by soil, situation, culture, climate, &c. These changes respect *magnitude*, *fulness* of flowers, *crisping* of leaves, *colour*, *taste* and *smell*. If the same kind of plant can possibly be produced from the seed of other kinds, these are but varieties of the same species. All apples are but *varieties* of the same species.

Vaulted. Arched over like the roof of the mouth.

Veined, 17.

Ventriçose. Swelling out as if blown up with wind.

Vertical. Standing or hanging up and down at right angles with the horizon; or parallel to the stem.

Vesicular. Containing, or consisting of, a cellular substance.

Villose, *villosus*. Having a superficial covering of long soft whitish hairs.

Viscid. Covered superficially with a sticky juice.

Umbel, 18.

Umbelliferous. Bearing umbels; as Carrot, Dill, Fennel.

Umbilicate. Having a kind of central roundish hollow or protuberance, as on the end of an apple, or of a pompion.

Unarmed. Having no thorns nor prickles.

Undulate. Wavy.

Unequal. The parts not corresponding in size, form and duration.

Volva, 10.

Urceolate. Swelling out like a pitcher, and not contracting much at top.

Urn-form. Swelling in the middle and contracting at the top; as the calyx of the Rose.

Utricles. The little bag-like reservoirs for sap.

Utriculus. A little bladder.

Wedge-form. Obovate with straitish sides.

Wheel-form, 10.

Whorled. Surrounding the stem in numbers at intervals; as the leaves of Bedstraw, and the flowers of Motherwort.

Wings. The two side petals in a papilionaceous corol.

Withering. Having a shrivelled and decaying appearance, though not actually in a state of decay; as the flowers of elm.

Wood, 14.

Zigzag. See flexuose.

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[illegible] to be recovered in [illegible]
[illegible] having cognizance thereof, which [illegible]
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[illegible] That the [illegible] president and
directors, when they have [illegible] of the
[illegible] bridges [illegible] at all times thereafter [illegible] as by
[illegible] providing [illegible] person or persons, to attend
the toll [illegible] on ſaid [illegible] for the [illegible]
[illegible] plying [illegible] property to paſs over [illegible]
[illegible] the toll hereby [illegible] to be exacted [illegible]
[illegible] *And be it further* [illegible] That it ſhall not be lawful for
any perſon or perſons to [illegible] bridge or eſtabliſh any ferry
acroſs the ſaid weſt and eaſt [illegible] of Delaware river within two
miles either above or below the bridges to be erected and main-
tained in purſuance of this act, except between the times the
ſaid bridges or either of them ſhall not be paſſable, or forcibly to
paſs the ſaid bridges or either of them without having previouſ-
ly paid to the toll-gatherer for the uſe of the ſaid corporation,
the toll hereby eſtabliſhed for croſſing the ſaid bridges, but that
every ſuch perſon or perſons ſhall, for every ſuch [illegible] offence or

XXXIV. [illegible]
[illegible]
[illegible]
[illegible] one or
all monies [illegible]
ſhall at all reaſon[illegible]
ſtockholder, and [illegible]
clear profits and [illegible]
firſt deducted) among
and [illegible] on the firſt
year, [illegible] the half
profits among the ſtock
and where the ſame wil
paid accordingly.

XXXV. *And be* [illegible]
[illegible] unreaſonably delay [illegible]
of the gates, or ſhall de
act eſtabliſhed for [illegible]
ſuch offence, forfeit [illegible]
cuted for and recovered
county where ſuch offen
of the perſon [illegible]

XXXVI. [illegible]